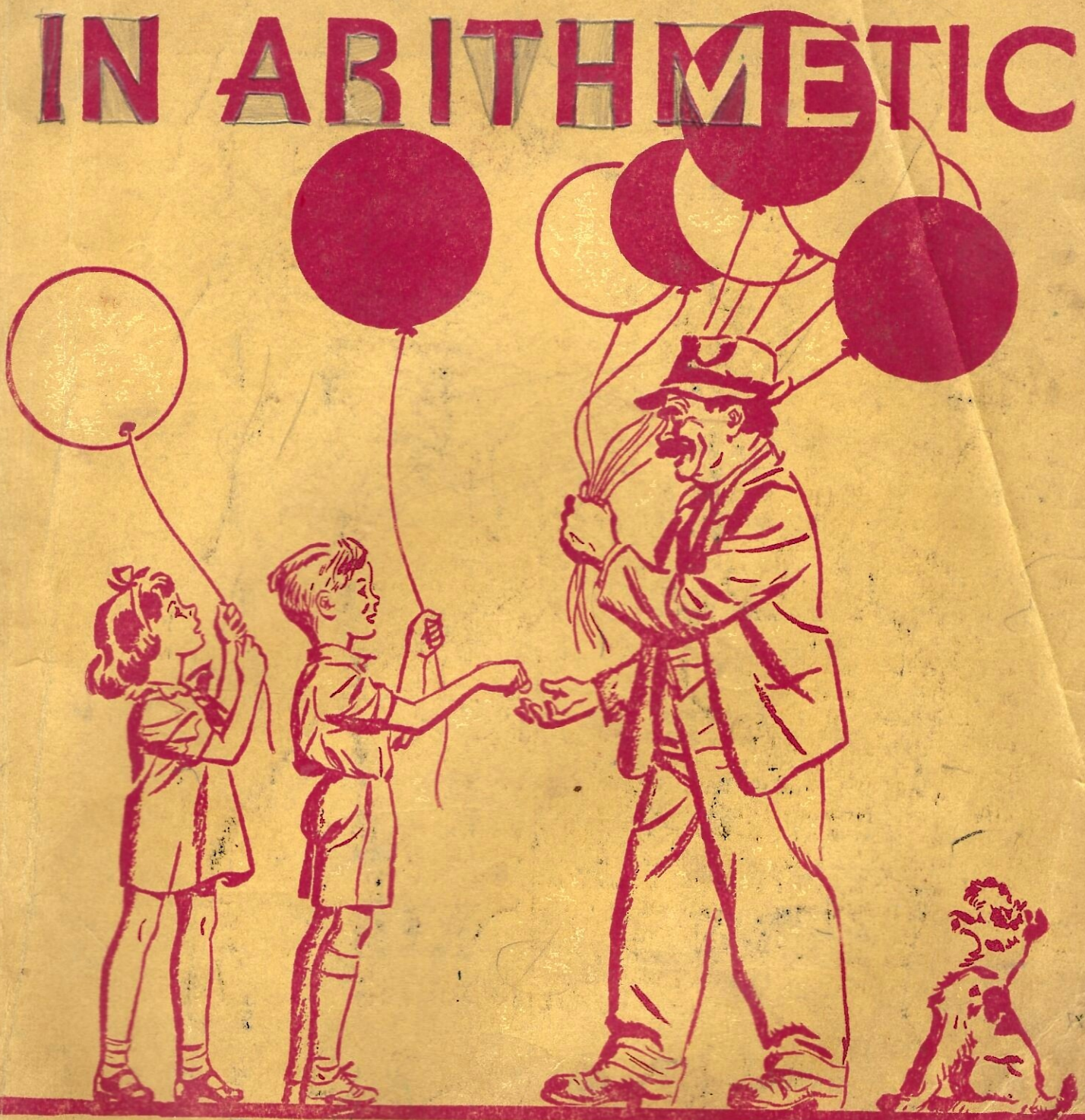
ADVENTURES IN ARITHMETIC



Room 106

AN ARITHMETIC WORKBOOK BY CLIFFORD B. UPTON

James Might.

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NUMBER TWO

ADVENTURES IN ARITHMETIC · Number TWO

A Workbook Presenting New Methods of Teaching the Addition and Subtraction Facts through Number Relationships

By CLIFFORD B. UPTON, Professor of Mathematics, Teachers College, Columbia University

PREFACE

Number Needs of Children. When a child counts the pennies in his bank or the number of pupils in his class, when he finds a certain page in a book or the date on the calendar, when he keeps his score in a game or makes simple purchases, when he tells the time or measures with a ruler, when he writes his address or gives his telephone number — in all these situations and in many others, he has a definite need for number that expresses itself before or soon after he enters school. Such a need is as real to a child as any other experience that he has. It is this everyday use of number on the part of children that motivates instruction in primary number today.

Scope of the Work. In order to satisfy the number needs of young children, most of our best city and state courses of study outline a course of instruction in arithmetic that plans to give the child, by the end of the second grade, the ability to read and write numbers, to count above 100, to make simple measurements, and to use with some facility the 100 basic facts in addition and the 100 basic facts in subtraction. This Workbook covers all the topics just mentioned and is suitable for use in the second grade or in such other grade as these topics may be taught.

Pupil Interest. In writing this book the constant aim has been to make the pages so attractive, so varied, and so interesting that the children who use the book will look forward to their arithmetic work with the same joy and eagerness with which they enter into any other school activity.

Adaptability. This book will serve those schools in which the teaching of arithmetic is somewhat systematic; it will be equally useful in schools where instruction is informal.

Basic Number Facts. The 100 basic facts in addition and the 100 basic facts in subtraction are more frequently used in everyday life than any other facts in the entire field of mathematics, yet many elementary school pupils, even as far up as the eighth grade, show a very imperfect mastery of these facts. This discouraging state of affairs is due, in general, to the shortcomings of the prevailing *drill method* of teaching these facts which requires pupils to repeat, over and over again, abstract number combinations which are often meaningless to them.

In order to remedy this situation, and also to put *meaning*, *understanding*, and *interest* into primary number work, the basic facts in addition and subtraction are taught in this book by the use of *number relationships*, a method which has been shown by practical experience and by scientific experiment to be distinctly superior to the drill method. This new method is described on pages 156–158 of this book.

Subtraction. The drill method of teaching the subtraction facts required the pupil to memorize 100 separate subtraction facts independent of the 100 addition facts. Further, the drill method provided no means whatever by which a pupil, who gave the wrong answer to a subtraction fact, could correct himself without being told the answer or looking it up. The method of number relationships, taught in this book, gives the pupil a method by which he easily obtains each subtraction fact from the corresponding addition fact and also shows him how to correct himself if he gives a wrong response to a subtraction fact. See page 157 of this book. This treatment of subtraction harmonizes fully with any method of written subtraction that the pupil may be taught a year or so later.

Vocabulary. In order that pupils may proceed with the study of number without being handicapped with reading difficulties, the vocabulary of this book has been limited to less than 400 words, all these words (with the exception of a few necessary arithmetical terms) being those with which the pupils have already become familiar in their primers and first readers. This vocabulary contains an unusually high percentage of the words given in the authoritative word lists for primary reading.

Diagnostic Tests. Diagnostic tests are included which enable the teacher to discover those groups of number facts on which the pupils need further drill.

Remedial Work. Remedial exercises on each of the groups of number facts are given on pages 143–155 of this Workbook, thus providing fully for the individual differences of pupils. References to this remedial work are given at the end of each diagnostic test and on the last line of many of the sets of practice exercises.

Suggestions for the Teacher. Suggestions for using this Workbook will be found on page 158.

Acknowledgment. The author acknowledges his great indebtedness to Siegried M. Upton, teacher for many years in the Horace Mann Elementary School of Teachers College, Columbia University, for her many valuable contributions to this book.

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MADE IN U.S.A. E.P. 39

FINDING THE RIGHT WORD

Draw a line under the right word.
The first one shows how:

Bob has a big / little dog.

Bob has a short / long fish pole.

Bob is taller / shorter than Betty.

Betty has more / less fish than Bob.

Bob has more / less fish than Betty.

Betty's dog is larger / smaller than Bob's.

COUNTING BY 10's AND 5's

1. Bob is counting his pennies. He puts 10 pennies in each pile. Then he counts the piles like this:

10, 20, 30, 40, 50, 60

2. Write the numbers from 10 to 100 by 10's:

10 20 30 40 50

60 70 80 90 100

3. Betty has 8 piles of pennies. There are 5 pennies in each pile. She counts her pennies by 5's like this:

5 10 15 20 25 30 35 40

4. Count by 5's from 5 to 100:

5 10 15 20 25 30 35 40

45 50 55 60 65 70 75 80

85 90 95 100

5. Begin with 25 and count by 5's to 100:

25 30 35 40 45 50 55 60

65 70 75 80 85 90 95 100

COUNTING TO 100

Write the numbers that are left out:

21	31	41	51	61	71	81	91
22	32	42	52	62	72	82	92
23	33	43	53	63	73	83	93
24	34	44	54	64	74	84	94
25	35	45	55	65	75	85	95
26	36	46	56	66	76	86	96
27	37	47	57	67	77	87	97
28	38	48	58	68	78	88	98
29	39	49	59	69	79	89	99
30	40	50	60	70	80	90	100

17 comes after 16.

64 comes after 63.

11 comes after 10.

90 comes after 89.

33 comes after 32.

48 comes before 49.

89 comes before 90.

13 comes before 14.

56 comes before 57.

99 comes before 100.

FINDING NUMBERS

Draw a line under the largest number:

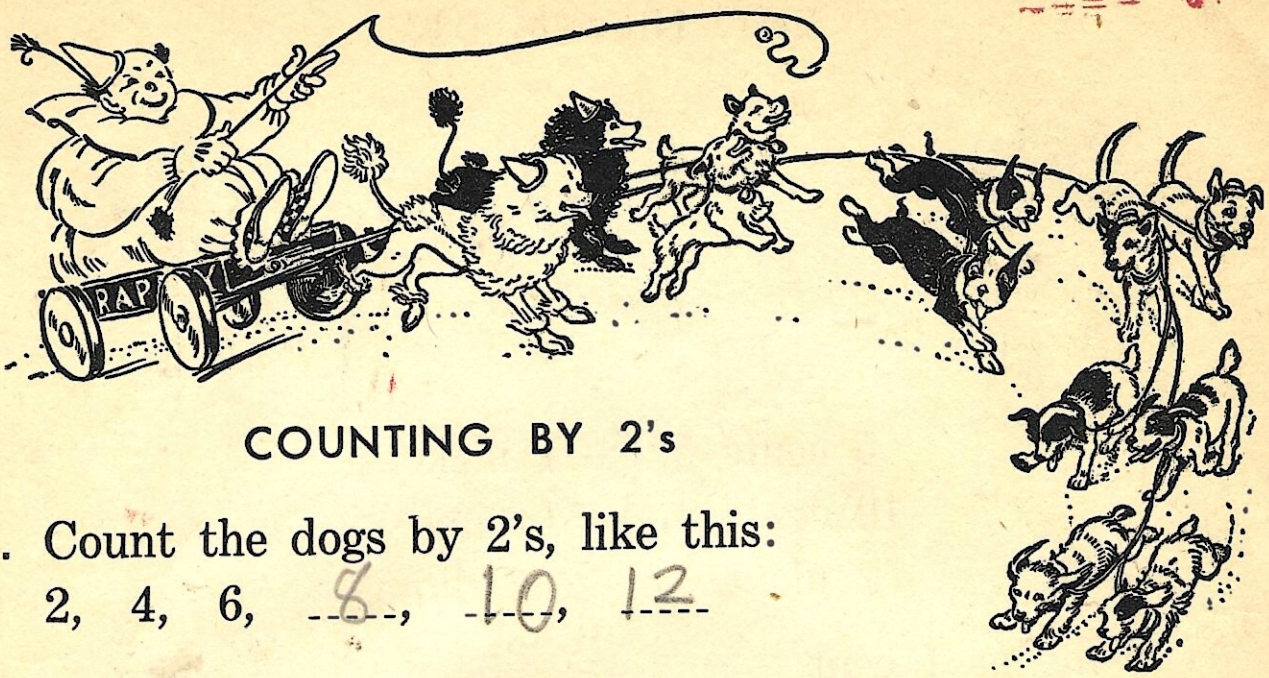
(1)	18	23	11	(5)	7	71	17
(2)	54	12	23	(6)	81	75	93
(3)	37	31	67	(7)	16	26	36
(4)	26	19	32	(8)	22	77	66

Draw a line under the smallest number:

(9)	45	33	14	(12)	20	50	30
(10)	12	16	18	(13)	23	10	27
(11)	27	17	11	(14)	19	11	25

Write the numbers that come before and after each of these numbers. The first one shows how:

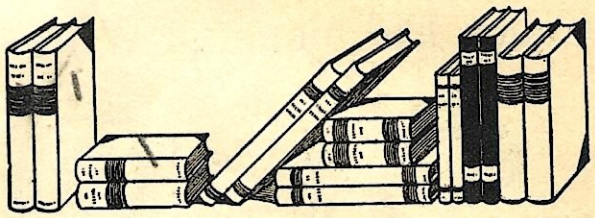
(15)	90	91	92	57	58	59	70	71	72
(16)	13	14	15	62	63	64	25	26	27
(17)	54	55	56	19	19	20	67	68	69
(18)	76	77	78	19	20	21	46	47	48
(19)	48	49	50	32	33	34	14	15	16
(20)	9	10	11	98	99	100	41	42	43
(21)	83	84	85	31	32	33	85	86	87



COUNTING BY 2's

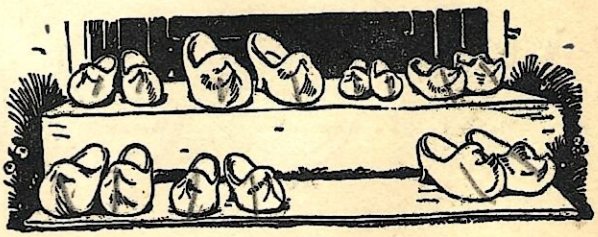
1. Count the dogs by 2's, like this:
   2, 4, 6, 8, 10, 12

2. Count the books by 2's:



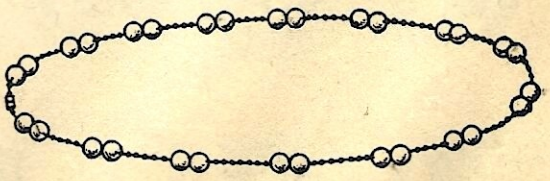
2 4 6 8
10 12 14 16

3. Count the shoes by 2's:



2 4 6 8
10 12 14

4. Count the beads by 2's:



2 4 6 8
10 12 14 16
18 20 22 24 26 28 30

5. Write the numbers from 30 to 44 by 2's:
   30 32 34 36 38 40 42 44

6

CENT, NICKEL, DIME

A Penny
1 *cent*

A Nickel
5 *cents*

A Dime
10 *cents*

5 cents make 1 nickel.
10 cents make 1 dime.
2 nickels make 1 dime.

1¢ means 1 cent. 5¢ means 5 cents.

Count the money. Write the answer on the line:

1. 9 ¢

2. 15 ¢

3. 18 ¢

4. 24 ¢

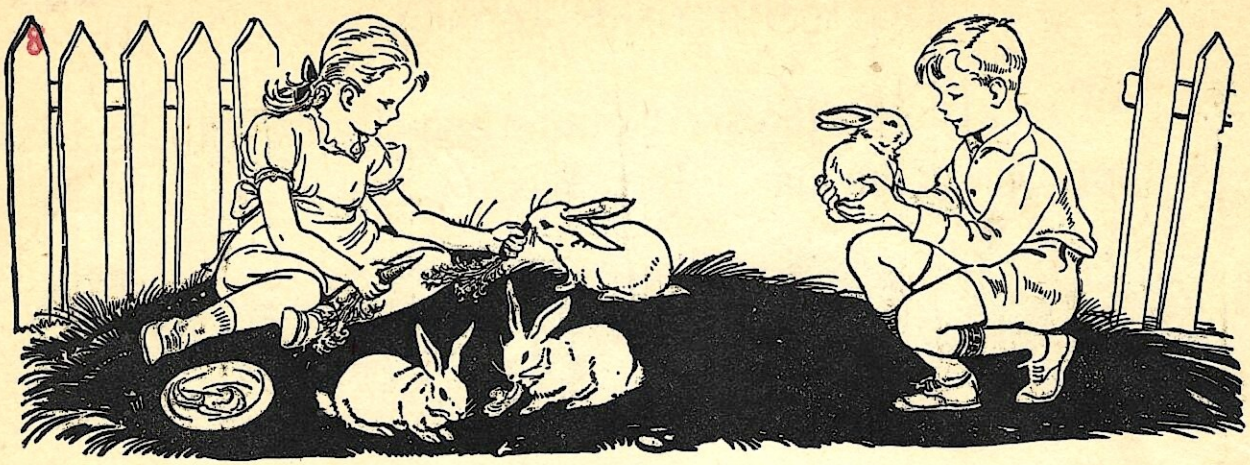
5. 28 ¢

COUNTING MONEY

1. Bob has these dimes. Count them by 10's to find how many cents he has. Bob has 80¢.

2. Betty has these nickels. Count them by 5's to tell how many cents she has. Betty has 35¢.

3. 1 nickel = 5 cents. 1 dime = 10 cents.
4. 2 nickels = 10 cents. 1 dime = 2 nickels.
5. 3 nickels = 15 cents. 2 dimes = 20 cents.
6. 13¢ = 1 dime and 3 cents. 3 dimes = 30¢.
7. 17¢ = 1 dime and 7 cents. 5 dimes = 50¢.
8. 18¢ = 1 dime and 8 cents. 4 dimes = 40¢.
9. 15¢ = 1 dime and 5 nickel. 6 dimes = 60¢.
10. 22¢ = 2 dimes and 2 cents. 4 nickels = 20¢.
11. 24¢ = 2 dimes and 4 cents. 5 nickels = 10¢.
12. 10¢ = 2 nickels. 15¢ = 3 nickels.



THE RABBITS

1. Betty has 3 rabbits. Bob gives her 1 rabbit. Then Betty has 4 rabbits.
   3 and 1 are 4. 1 and 3 are 4.

$$\begin{array}{r} 3 \\ 1 \\ \hline 4 \end{array} \qquad \begin{array}{r} 1 \\ 3 \\ \hline 4 \end{array}$$

2. The rabbits ate 5 carrots. Then they ate 1 more carrot. They ate 6 carrots.
   5 and 1 are 6. 1 and 5 are 6.

$$\begin{array}{r} 5 \\ 1 \\ \hline 6 \end{array} \qquad \begin{array}{r} 1 \\ 5 \\ \hline 6 \end{array}$$

3. Bob says that he has 5 big rabbits and 5 little rabbits. He has 10 rabbits.
   5 and 5 are 10. 5 and 5 are 10.

$$\begin{array}{r} 5 \\ 5 \\ \hline 10 \end{array} \qquad \begin{array}{r} 5 \\ 5 \\ \hline 10 \end{array}$$

4. Mary has 2 white rabbits and 1 black rabbit. She has 3 rabbits in all.
   2 and 1 are 3. 1 and 2 are 3.

$$\begin{array}{r} 2 \\ 1 \\ \hline 3 \end{array} \qquad \begin{array}{r} 1 \\ 2 \\ \hline 3 \end{array}$$

5. 7 rabbits and 1 rabbit are 8 rabbits.
   7 and 1 are 8. 1 and 7 are 8.

$$\begin{array}{r} 7 \\ 1 \\ \hline 8 \end{array} \qquad \begin{array}{r} 1 \\ 7 \\ \hline 8 \end{array}$$

ADDING NUMBERS

(1) 7 and 1 are 8. 2 and 1 are 3.

(2) 5 and 5 are 10. 1 and 5 are 6.

(3) 1 and 3 are 4. 1 and 7 are 8.

(4) 5 and 1 are 6. 5 and 5 are 10.

(5) 3 and 1 are 4. 2 and 1 are 3.

(6) 1 and 7 are 8. 3 and 1 are 4.

(7) 1 and 2 are 3. 5 and 1 are 6.

Add these numbers:

(8)

2	7	5	1	3	1	1	1
1	1	5	5	1	2	7	3
3	8	10	6	4	3	8	4

(9)

7	1	1	5	1	5	1	3
1	3	5	5	7	1	2	1
8	4	6	10	8	6	3	4

(10)

5	3	1	5	7	1	1	2
5	1	2	1	1	3	5	1
10	4	3	6	8	4	6	3

(11)

1	2	5	1	5	1	7	1
7	1	5	3	1	2	1	5
8	3	10	4	6	3	8	6

Remedial work: Rows 1–2, page 143.

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FEEDING BIRDS

1. Jane is feeding 4 birds.
   Jim is feeding 1 bird.
   Jane and Jim are feeding 5 birds.
   4 and 1 are 5. 1 and 4 are 5.

$$\begin{array}{r} 4 \\ 1 \\ \hline 5 \end{array} \qquad \begin{array}{r} 1 \\ 4 \\ \hline 5 \end{array}$$

2. Today 1 robin came to Jane's dish.
   Today 1 robin came to Jim's dish.
   Today 2 robins came in all.
   1 and 1 are 2. 1 and 1 are 2.

$$\begin{array}{r} 1 \\ 1 \\ \hline 2 \end{array} \qquad \begin{array}{r} 1 \\ 1 \\ \hline 2 \end{array}$$

3. Yesterday Jane and Jim fed 6 small birds and 1 large bird.
   Yesterday they fed 7 birds in all.
   6 and 1 are 7. 1 and 6 are 7.

$$\begin{array}{r} 6 \\ 1 \\ \hline 7 \end{array} \qquad \begin{array}{r} 1 \\ 6 \\ \hline 7 \end{array}$$

4. 8 and 1 are 9. 1 and 8 are 9.
   9 and 1 are 10. 1 and 9 are 10.

$$\begin{array}{r} 1 \\ 8 \\ \hline 9 \end{array} \qquad \begin{array}{r} 1 \\ 9 \\ \hline 10 \end{array}$$

ADDING NUMBERS

Add these numbers:

(1)	8	1	1	6	4	9	1	1
	1	4	1	1	1	1	8	6
	9	5	2	7	5	10	9	7
(2)	1	1	9	1	8	1	6	1
	9	8	1	6	1	4	1	1
	10	9	10	7	9	5	7	2
(3)	1	8	6	1	1	4	9	1
	4	1	1	1	9	1	1	6
	5	9	7	2	10	5	10	7
(4)	1	4	1	1	1	9	8	1
	1	1	8	6	4	1	1	9
	2	5	9	7	5	10	9	10

Remedial work: Rows 3–4, page 143.

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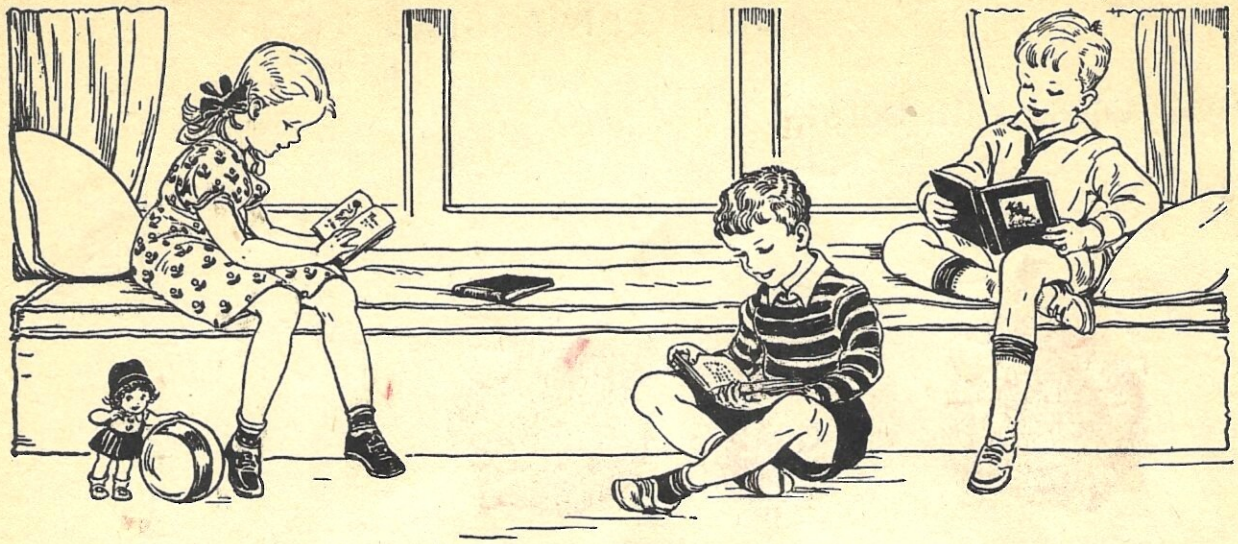
4 + 1 = 5 means 4 and 1 are 5.

The sign + means *and*. It tells you to *add*.

The sign = means *are*.

Add these numbers:

(5)	1 + 9 = 10	8 + 1 = 9	1 + 1 = 2	6 + 1 = 7
(6)	4 + 1 = 5	1 + 6 = 7	1 + 4 = 5	1 + 8 = 9
(7)	1 + 1 = 2	9 + 1 = 10	8 + 1 = 9	4 + 1 = 5



READING STORIES

1. Betty's new book has 6 stories. Betty has read 5 stories. Betty has 1 more story to read.

5 and 1 are 6. 1 and 5 are 6.

2. Bob's book has 10 stories. Bob has read 5 stories. Bob has 5 more stories to read.

5 and 5 are 10. 5 and 5 are 10.

3. Jim's new book has 8 stories. Jim has read 1 story. Jim has 7 more stories to read.

1 and 7 are 8. 7 and 1 are 8.

4. 4 and 1 are 5. 1 and 4 are 5.

1 and 8 are 9. 8 and 1 are 9.

6 and 1 are 7. 1 and 6 are 7.

1 and 9 are 10. 9 and 1 are 10.

HOW MANY APPLES ARE LEFT?

1. Here are 3 small apples and 1 large apple.

3 apples and 1 apple are 4 apples.

3 and 1 are 4. 1 and 3 are 4.

2. Take away 1 apple from 4 apples.

How many apples are left? 3

1 apple from 4 apples leaves 3 apples.

1 from 4 leaves 3. 1 from 4 is 3.

$$\begin{array}{r} 4 \\ -1 \\ \hline 3 \end{array}$$

3. Take away 3 apples from 4 apples.

How many apples are left? 1

3 apples from 4 apples leaves 1 apple.

3 from 4 leaves 1. 3 from 4 is 1.

$$\begin{array}{r} 4 \\ -3 \\ \hline 1 \end{array}$$

When you take 3 from 4, you subtract 3 from 4.

The sign – means *take away* or *subtract*.

$$\begin{array}{r} 4 \\ -3 \\ \hline 1 \end{array}$$

You subtract to find how many are left.

THE BEARS THAT RUN AWAY

1. How many bears do you see? 6

If 1 bear runs away from 6 bears, how many bears are left? 5

1 from 6 is 5. 1 from 6 is 5.

$$\begin{array}{r} 6 \\ -1 \\ \hline 5 \end{array} \qquad \begin{array}{r} 6 \\ -1 \\ \hline 5 \end{array}$$

2. If 5 bears run away from 6 bears, how many bears are left? 1

5 from 6 is 1. 5 from 6 is 1.

$$\begin{array}{r} 6 \\ -5 \\ \hline 1 \end{array} \qquad \begin{array}{r} 6 \\ -5 \\ \hline 1 \end{array}$$

3. If 1 bear runs away from 8 bears, how many bears are left? 7

1 from 8 is 7. 1 from 8 is 7.

$$\begin{array}{r} 8 \\ -1 \\ \hline 7 \end{array} \qquad \begin{array}{r} 8 \\ -1 \\ \hline 7 \end{array}$$

4. If 7 bears run away from 8 bears, how many bears are left? 1

7 from 8 is 1. 7 from 8 is 1.

$$\begin{array}{r} 8 \\ -7 \\ \hline 1 \end{array} \qquad \begin{array}{r} 8 \\ -7 \\ \hline 1 \end{array}$$

5. 1 from 3 is 2. 2 from 3 is 1.

2 from 3 is 1. 1 from 3 is 2.

1 from 3 is 2. 2 from 3 is 1.

$$\begin{array}{r} 3 \\ -1 \\ \hline 2 \end{array} \qquad \begin{array}{r} 3 \\ -2 \\ \hline 1 \end{array}$$

SUBTRACTING NUMBERS

(1) 7 and 1 are 8. 7 from 8 is 1.

(2) 1 and 2 are 3. 1 from 3 is 2.

(3) 5 and 5 are 10. 5 from 10 is 5.

(4) 1 and 5 are 6. 1 from 6 is 5.

(5) 3 and 1 are 4. 3 from 4 is 1.

(6) 1 and 7 are 8. 1 from 8 is 7.

(7) 2 and 1 are 3. 2 from 3 is 1.

Subtract these numbers:

(8)

4	8	3	4	6	10	8	3
−1	−7	−1	−3	−1	−5	−1	−2
3	1	2	1	5	5	7	1

(9)

8	6	4	3	10	3	8	6
−1	−5	−1	−2	−5	−1	−7	−1
7	1	3	1	5	2	1	5

(10)

4	6	3	8	3	10	6	4
−3	−1	−1	−7	−2	−5	−5	−1
1	5	2	1	1	5	1	3

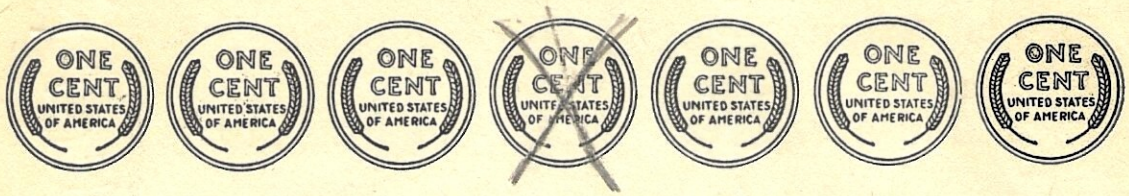
(11)

3	4	8	6	10	8	4	6
−2	−1	−7	−5	−5	−1	−3	−1
1	3	1	1	5	7	1	5

Remedial work: Rows 1–2, page 146.

HOW MANY CENTS ARE LEFT?

1. Mary has 7 cents. Here they are:



Mary spends 1 cent. Cover up the cent that she spends. How many cents has Mary left? 6

1 from 7 is 6. 1 from 7 is 6.

$$\begin{array}{r} 7 \\ -1 \\ \hline 6 \end{array} \qquad \begin{array}{r} 7 \\ -1 \\ \hline 6 \end{array}$$

2. Ann has 7 cents. She spends 6 cents. How many cents has Ann left? 1

6 from 7 is 1. 6 from 7 is 1.

$$\begin{array}{r} 7 \\ -6 \\ \hline 1 \end{array} \qquad \begin{array}{r} 7 \\ -6 \\ \hline 1 \end{array}$$

3. Fred has 9 cents. He spends 1 cent. Fred has 8 cents left.

1 from 9 is 8. 1 from 9 is 8.

$$\begin{array}{r} 9 \\ -1 \\ \hline 8 \end{array} \qquad \begin{array}{r} 9 \\ -1 \\ \hline 8 \end{array}$$

4. Betty has 9 cents. She spends 8 cents. Betty has 1 cent left.

8 from 9 is 1. 8 from 9 is 1.

$$\begin{array}{r} 9 \\ -8 \\ \hline 1 \end{array} \qquad \begin{array}{r} 9 \\ -8 \\ \hline 1 \end{array}$$

5. 1 from 5 is 4. 1 from 10 is 9.

4 from 5 is 1. 9 from 10 is 1.

1 from 5 is 4. 1 from 10 is 9.

$$\begin{array}{r} 5 \\ -4 \\ \hline 1 \end{array} \qquad \begin{array}{r} 10 \\ -9 \\ \hline 1 \end{array}$$

SUBTRACTING NUMBERS

Subtract these numbers:

(1)	7 − 6 = 1	9 − 1 = 8	5 − 4 = 1	10 − 9 = 1	5 − 1 = 4	2 − 1 = 1	7 − 1 = 6	9 − 8 = 1
(2)	10 − 1 = 9	5 − 4 = 1	2 − 1 = 1	7 − 6 = 1	5 − 4 = 1	9 − 1 = 8	5 − 1 = 4	10 − 9 = 1
(3)	7 − 1 = 6	9 − 8 = 1	10 − 9 = 1	9 − 1 = 8	2 − 1 = 1	5 − 4 = 1	10 − 1 = 9	7 − 6 = 1
(4)	5 − 1 = 4	7 − 6 = 1	10 − 1 = 9	9 − 8 = 1	10 − 9 = 1	7 − 1 = 6	2 − 1 = 1	9 − 1 = 8

Remedial work: Rows 3–4, page 146.

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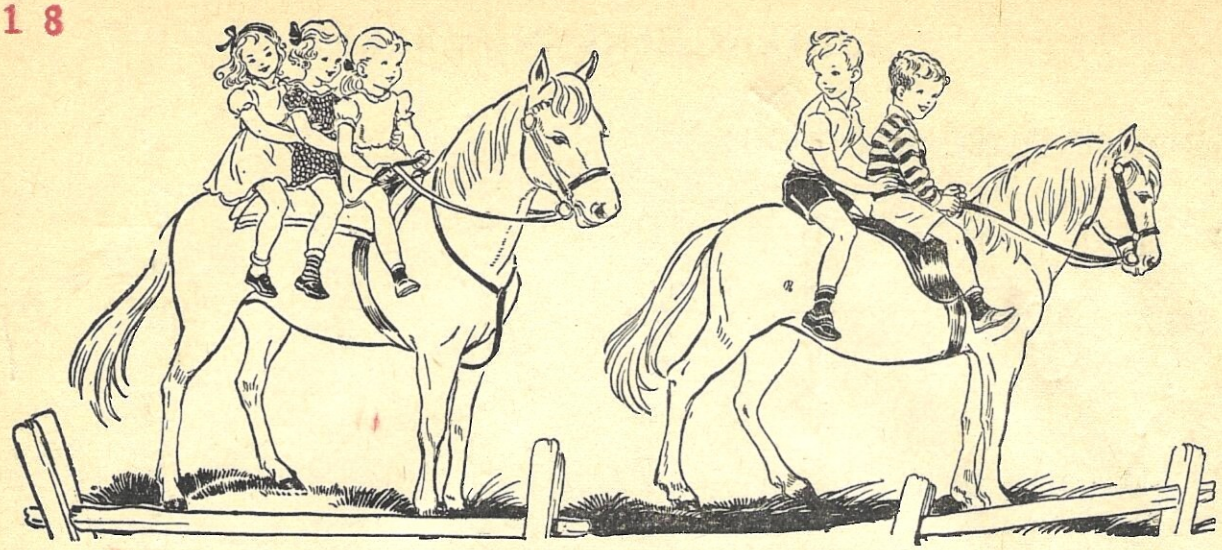
7 − 1 = 6 means 7 take away 1 is 6, or 7 less 1 is 6.

The sign − means *take away* or *less*.

The sign − tells you to *subtract*.

Subtract these numbers:

(5)	5 − 4 = 1	9 − 8 = 1	7 − 1 = 6	7 − 6 = 1
(6)	9 − 1 = 8	5 − 1 = 4	9 − 8 = 1	10 − 1 = 9
(7)	2 − 1 = 1	7 − 6 = 1	2 − 1 = 1	10 − 9 = 1



HAVING A RIDE

1. Ann said, "My pony will carry 3 girls."
   Bob said, "My pony will carry 2 boys."
   Both ponies will carry 5 children.
   3 and 2 are 5. 2 and 3 are 5.

$$\begin{array}{r} 3 \\ 2 \\ \hline 5 \end{array} \qquad \begin{array}{r} 2 \\ 3 \\ \hline 5 \end{array}$$

2. When 2 girls and 2 boys get on Bob's pony, the pony will not go.
   Bob says, "4 children are too many."
   2 and 2 are 4. 2 and 2 are 4.

$$\begin{array}{r} 2 \\ 2 \\ \hline 4 \end{array} \qquad \begin{array}{r} 2 \\ 2 \\ \hline 4 \end{array}$$

3. Today 5 girls had rides on Ann's pony.
   Today 2 boys had rides on Bob's pony.
   Today 7 children had rides.
   5 and 2 are 7. 2 and 5 are 7.

$$\begin{array}{r} 5 \\ 2 \\ \hline 7 \end{array} \qquad \begin{array}{r} 2 \\ 5 \\ \hline 7 \end{array}$$

4. 7 and 2 are 9. 2 and 7 are 9.
   3 and 3 are 6. 3 and 3 are 6.

$$\begin{array}{r} 7 \\ 2 \\ \hline 9 \end{array} \qquad \begin{array}{r} 3 \\ 3 \\ \hline 6 \end{array}$$

ADDING NUMBERS

Add these numbers:

(1)	5 + 2 = 7	2 + 3 = 5	2 + 7 = 9	2 + 2 = 4	7 + 2 = 9	2 + 5 = 7	3 + 3 = 6	3 + 2 = 5
(2)	2 + 2 = 4	3 + 3 = 6	2 + 5 = 7	7 + 2 = 9	3 + 2 = 5	2 + 7 = 9	5 + 2 = 7	2 + 3 = 5
(3)	7 + 2 = 9	3 + 2 = 5	5 + 2 = 7	3 + 3 = 6	2 + 3 = 5	2 + 7 = 9	2 + 2 = 4	2 + 5 = 7
(4)	2 + 5 = 7	3 + 2 = 5	2 + 2 = 4	3 + 3 = 6	7 + 2 = 9	2 + 3 = 5	2 + 7 = 9	5 + 2 = 7

Remedial work: Rows 5–6, page 143.

REVIEW OF ADDITION

Add these numbers:

(5)	1 + 3 = 4	1 + 8 = 9	5 + 5 = 10	3 + 2 = 5	7 + 1 = 8	1 + 4 = 5	5 + 1 = 6	1 + 9 = 10
(6)	5 + 2 = 7	3 + 1 = 4	1 + 7 = 8	6 + 1 = 7	2 + 3 = 5	1 + 2 = 3	3 + 3 = 6	7 + 2 = 9
(7)	8 + 1 = 9	2 + 7 = 9	2 + 5 = 7	9 + 1 = 10	1 + 5 = 6	2 + 1 = 3	1 + 6 = 7	4 + 1 = 5

Remedial work: Rows 1–6, page 143.

WHAT TO DO IF YOU FORGET

(1) 4 and 1 are 5. 1 and 4 are 5.
Does 4 and 1 have the same answer as 1 and 4? yes

(2) 1 and 7 are 8. 7 and 1 are 8.
Does 1 and 7 have the same answer as 7 and 1? yes

(3) 2 and 5 are 7. 5 and 2 are 7.

---

2 and 5 has the same answer as 5 and 2, but the numbers are turned around.

---

(4) Bob forgets the answer to 2 and 7. So he turns the numbers around and gets 7 and 2. He knows that 7 and 2 are 9. This tells him that 2 and 7 are 9.

(5) Ann forgets the answer to 1 and 9. She turns the numbers around and gets 9 and 1. She knows that 9 and 1 are 10. So 1 and 9 are 10.

(6) Mary forgets 2 and 6. She turns the numbers around and says, "6 and 2 are 8, so 2 and 6 are 8."

(7) 3 and 2 are 5, so 2 and 3 are 5.

If you cannot add two numbers, turn them around. Then try to add them.

DO YOU LIKE TO SKATE?

1. There were 4 children on skates.
   Then Bob and Betty put on their skates.
   That made 6 children on skates.
   4 and 2 are 6. 2 and 4 are 6.

$$\begin{array}{r} 4 \\ 2 \\ \hline 6 \end{array} \qquad \begin{array}{r} 2 \\ 4 \\ \hline 6 \end{array}$$

2. You see 6 children on skates.
   If 2 more children come to skate, there will be 8 children on skates.
   6 and 2 are 8. 2 and 6 are 8.

$$\begin{array}{r} 6 \\ 2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 2 \\ 6 \\ \hline 8 \end{array}$$

3. Today 4 girls and 4 boys will have a race on skates.
   There will be 8 children in the race.
   4 and 4 are 8. 4 and 4 are 8.

$$\begin{array}{r} 4 \\ 4 \\ \hline 8 \end{array} \qquad \begin{array}{r} 4 \\ 4 \\ \hline 8 \end{array}$$

4. 8 girls and 2 girls are 10 girls.
   8 and 2 are 10. 2 and 8 are 10.

$$\begin{array}{r} 8 \\ 2 \\ \hline 10 \end{array} \qquad \begin{array}{r} 10 \\ -2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 10 \\ 2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 2 \\ 8 \\ \hline 10 \end{array}$$

ADDING NUMBERS

Add these numbers:

(1)	8	2	4	6	2	4	2	4
	2	4	4	2	8	2	6	4
	10	6	8	8	10	6		
(2)	4	2	4	2	4	6	2	8
	2	6	4	8	2	2	4	2
	6	8	8	10	6	8	6	
(3)	2	8	2	6	4	2	4	6
	6	2	4	2	4	8	2	2
	8	10	6	8	8	10	6	

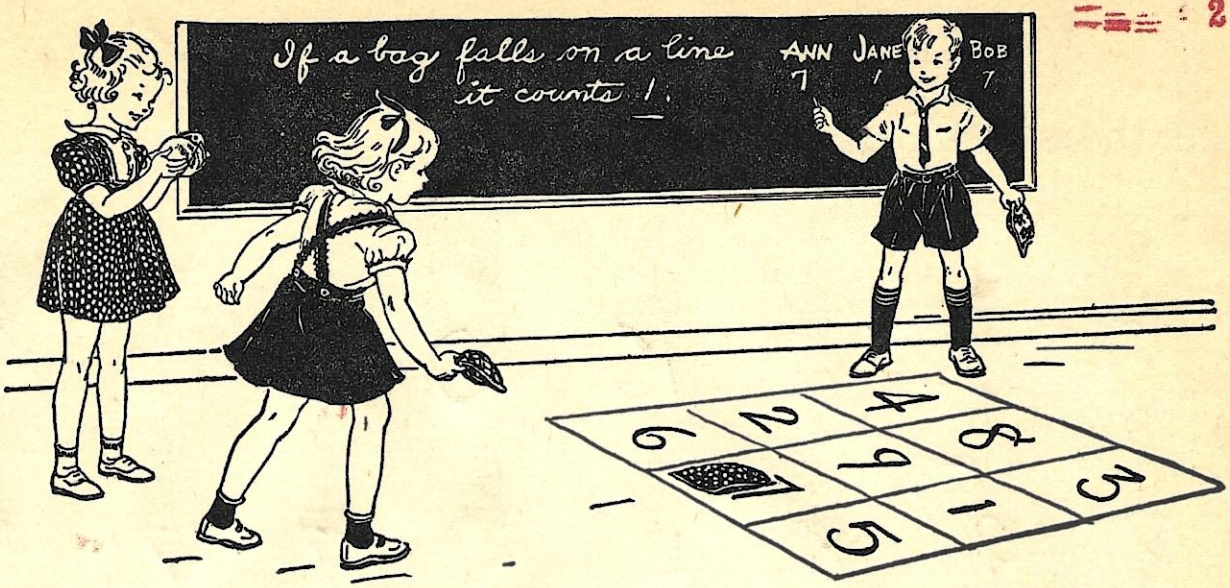
Remedial work: Rows 7–8, page 143.

REVIEW OF ADDITION

Add these numbers:

(4)	1	7	2	3	8	1	6	2
	2	2	4	3	2	9	1	6
	3	9	6	6	10	10	7	8
(5)	2	4	2	3	1	6	3	2
	5	2	8	2	4	2	1	2
	7	6	10	5	5	8	4	4
(6)	1	9	2	2	1	4	5	4
	5	1	1	7	8	4	2	1
	6	10	3	9	9	8	7	5
(7)	1	1	2	5	8	1	1	7
	6	7	3	5	1	1	3	1
	7	8	5	10	9	2	4	8

Remedial work: Rows 1–8, page 143.



FINDING SCORES

Jane throws 2 bags. One bag falls on 7. The other bag falls on 1. Jane's score is 8 because 7 and 1 are 8. Find each child's score:

1.	*Jane*	*Ann*	*Bob*	*Jane*	*Ann*	*Bob*	*Jane*	*Ann*
	7 + 1 = 8	2 + 2 = 4	9 + 1 = 10	3 + 2 = 5	1 + 6 = 7	5 + 5 = 10	1 + 5 = 6	8 + 1 = 9
2.	*Bob*	*Jane*	*Ann*	*Bob*	*Jane*	*Ann*	*Bob*	*Jane*
	4 + 2 = 6	1 + 8 = 9	2 + 8 = 10	2 + 1 = 3	2 + 5 = 7	1 + 4 = 5	3 + 3 = 6	6 + 2 = 8
3.	*Ann*	*Bob*	*Jane*	*Ann*	*Bob*	*Jane*	*Ann*	*Bob*
	3 + 1 = 4	2 + 7 = 9	1 + 1 = 2	8 + 2 = 10	2 + 6 = 8	1 + 9 = 10	4 + 4 = 8	7 + 2 = 9

REVIEW OF ADDITION

Add these numbers:

(1)	2 3 5	1 1 2	4 2 6	9 1 10	2 8 10	6 2 8	1 5 6	7 2 9
(2)	8 1 9	2 7 9	4 4 8	3 2 5	5 5 10	6 1 7	2 5 7	3 3 6
(3)	1 3 4	5 2 7	4 1 5	2 2 4	2 6 8	1 7 8	2 4 6	8 2 10

Remedial work: Rows 1–8, page 143.

TEST IN ADDITION

Add these numbers:

(4)	1 2 3	2 3 5	6 2 8	1 5 6	8 1 9	7 2 9	2 1 3	1 6 7
(5)	7 1 8	5 2 7	3 1 4	2 4 6	3 3 6	5 1 6	2 8 10	1 4 5
(6)	1 3 4	2 2 4	6 1 7	8 2 10	5 5 10	2 6 8	9 1 10	4 4 8
(7)	1 9 10	4 1 5	2 7 9	1 8 9	4 2 6	1 7 8	3 2 5	2 5 7

Remedial work: Rows 1–8, page 143.

WHAT NUMBER IS LEFT OUT?

Find the number that is left out. In the first one write 2 because 5 and 2 are 7:

(1)	$\frac{5}{\frac{2}{7}}$	$\frac{2}{\frac{7}{9}}$	$\frac{4}{\frac{2}{6}}$	$\frac{8}{\frac{2}{10}}$	$\frac{2}{\frac{2}{4}}$	$\frac{6}{\frac{2}{8}}$	$\frac{2}{\frac{5}{7}}$	$\frac{3}{\frac{3}{6}}$
(2)	$\frac{2}{\frac{3}{5}}$	$\frac{2}{\frac{8}{10}}$	$\frac{2}{\frac{5}{7}}$	$\frac{8}{\frac{2}{10}}$	$\frac{2}{\frac{6}{8}}$	$\frac{3}{\frac{3}{6}}$	$\frac{2}{\frac{7}{9}}$	$\frac{4}{\frac{4}{8}}$
(3)	$\frac{2}{\frac{6}{8}}$	$\frac{7}{\frac{2}{9}}$	$\frac{3}{\frac{2}{5}}$	$\frac{2}{\frac{4}{6}}$	$\frac{6}{\frac{2}{8}}$	$\frac{2}{\frac{3}{5}}$	$\frac{4}{\frac{4}{8}}$	$\frac{2}{\frac{2}{4}}$
(4)	$\frac{5}{\frac{5}{10}}$	$\frac{1}{\frac{7}{8}}$	$\frac{3}{\frac{2}{5}}$	$\frac{2}{\frac{4}{6}}$	$\frac{5}{\frac{2}{7}}$	$\frac{7}{\frac{2}{9}}$	$\frac{4}{\frac{2}{6}}$	$\frac{2}{\frac{8}{10}}$

Remedial work: Rows 3–4, page 145.

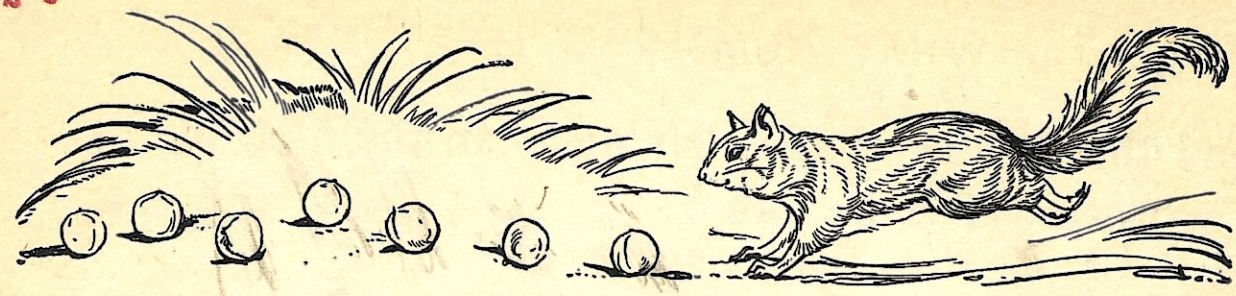
(5) 4 and 4 are 8. 6 and 2 are 8.

(6) 8 and 2 are 10. 2 and 7 are 9.

(7) 2 and 2 are 4. 2 and 3 are 5.

(8) 4 and 2 are 6. 3 and 3 are 6.

(9) 2 and 5 are 7. 2 and 6 are 8.



THE SQUIRREL AND THE BEARS

1. You see 7 nuts. The squirrel eats 2 nuts.
   Cover the 2 nuts that the squirrel eats.
   How many nuts are left? 5
   2 from 7 is 5. 2 from 7 is 5.

$$\begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$$

2. Look again at the 7 nuts. Cover 5 nuts.
   How many nuts are left? 2
   5 from 7 is 2. 5 from 7 is 2.

$$\begin{array}{r} 7 \\ -5 \\ \hline 2 \end{array}$$

3. You see 9 bears. Cover 2 of the bears.

   If you take 2 bears from 9 bears, how many bears are left? 7
   2 from 9 is 7. 2 from 9 is 7.

$$\begin{array}{r} 9 \\ -2 \\ \hline 7 \end{array}$$

4. Look at the 9 bears again. Cover 7 of them.
   7 bears from 9 bears leaves 2 bears.
   7 from 9 is 2 because 2 and 7 are 9.

$$\begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array}$$

SUBTRACTING NUMBERS

(1) You know that 3 and 2 make 5.
This shows that 3 from 5 is 2.
This also shows that 2 from 5 is 3.

$$\begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array} \qquad \begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array}$$

2 from 5 is 3 because 2 and 3 make 5.
3 from 5 is 2 because 3 and 2 make 5.

(2) 2 and 2 make 4, so 2 from 4 is 2.
3 and 3 make 6, so 3 from 6 is 3.

$$\begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array} \qquad \begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$

2 from 4 is 2 because 2 and 2 are 4.
3 from 6 is 3 because 3 and 3 are 6.

Subtract these numbers:

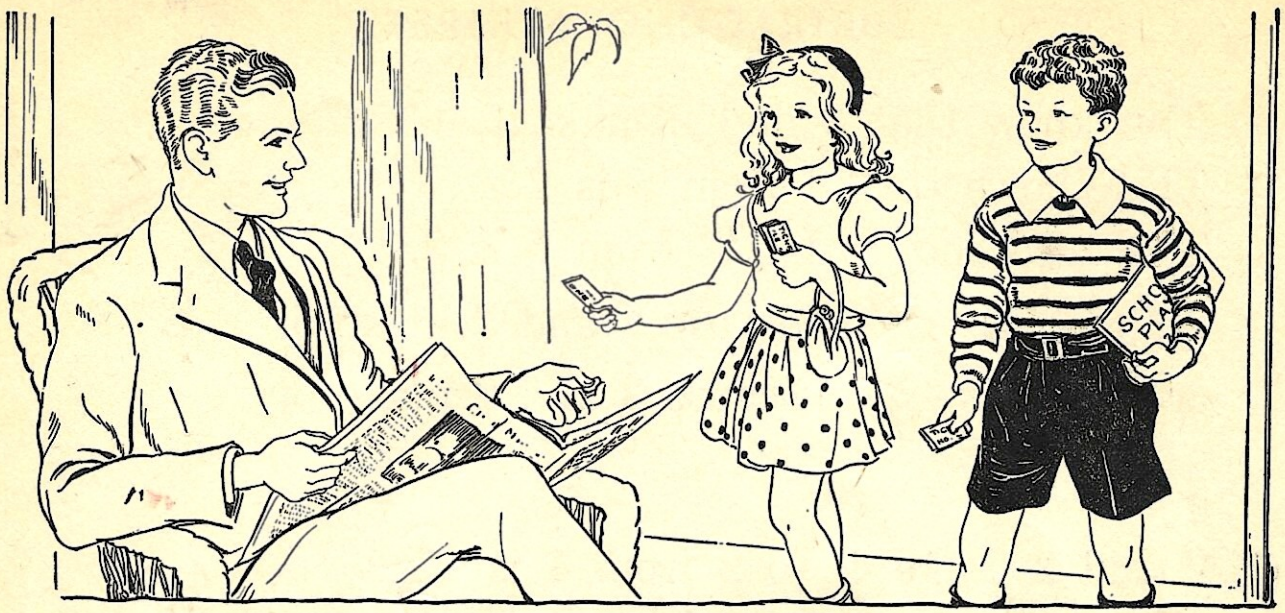
(3)
$$\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array} \quad \begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array} \quad \begin{array}{r} 9 \\ -2 \\ \hline 7 \end{array} \quad \begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array} \quad \begin{array}{r} 7 \\ -5 \\ \hline 2 \end{array} \quad \begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array} \quad \begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array} \quad \begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$$

(4)
$$\begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array} \quad \begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array} \quad \begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array} \quad \begin{array}{r} 7 \\ -5 \\ \hline 2 \end{array} \quad \begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array} \quad \begin{array}{r} 9 \\ -2 \\ \hline 7 \end{array} \quad \begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array} \quad \begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array}$$

(5)
$$\begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array} \quad \begin{array}{r} 9 \\ -2 \\ \hline 7 \end{array} \quad \begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array} \quad \begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array} \quad \begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array} \quad \begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array} \quad \begin{array}{r} 7 \\ -5 \\ \hline 2 \end{array} \quad \begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array}$$

(6)
$$\begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array} \quad \begin{array}{r} 7 \\ -2 \\ \hline 5 \end{array} \quad \begin{array}{r} 9 \\ -7 \\ \hline 2 \end{array} \quad \begin{array}{r} 5 \\ -2 \\ \hline 3 \end{array} \quad \begin{array}{r} 7 \\ -5 \\ \hline 2 \end{array} \quad \begin{array}{r} 9 \\ -2 \\ \hline 7 \end{array} \quad \begin{array}{r} 5 \\ -3 \\ \hline 2 \end{array} \quad \begin{array}{r} 4 \\ -2 \\ \hline 2 \end{array}$$

Remedial work: Rows 5–6, page 146.



SELLING TICKETS FOR THE PLAY

1. Mary had 6 tickets to sell. She has sold 2 tickets. She has 4 tickets left.
2 from 6 is 4 because 2 and 4 are 6.
4 from 6 is 2 because 4 and 2 are 6.

$$\begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array} \qquad \begin{array}{r} 6 \\ -4 \\ \hline 2 \end{array}$$

2. Jim had 10 tickets to sell. He has sold 2 tickets. He has 8 tickets left.
2 from 10 is 8 because 2 and 8 are 10.
8 from 10 is 2 because 8 and 2 are 10.

$$\begin{array}{r} 10 \\ -2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 10 \\ -8 \\ \hline 2 \end{array}$$

3. Jane had 8 tickets to sell. She has sold 2 tickets. She has 6 tickets left.
2 from 8 is 6 because 2 and 6 are 8.
6 from 8 is 2 because 6 and 2 are 8.

$$\begin{array}{r} 8 \\ -2 \\ \hline 6 \end{array} \qquad \begin{array}{r} 8 \\ -6 \\ \hline 2 \end{array}$$

4. Betty says that 4 from 8 is 4 because 4 and 4 are 8.

$$\begin{array}{r} 8 \\ -4 \\ \hline 4 \end{array} \qquad \begin{array}{r} 8 \\ -4 \\ \hline 4 \end{array}$$

LEARNING TO SUBTRACT

(1) 2 from 8 is 6 because 2 and 6 are 8.

(2) 4 from 6 is 2 because 4 and 2 are 6.

(3) 6 from 8 is 2 because 6 and 2 are 8.

(4) 4 from 8 is _____ because 4 and _____ are 8.

(5) 2 from 6 is _____ because 2 and _____ are 6.

(6) 2 from 10 is _____ because 2 and _____ are 10.

(7) 8 from 10 is _____ because 8 and _____ are 10.

Subtract these numbers:

(8)	8 − 6	6 − 2	10 − 8	8 − 2	8 − 6	6 − 4	8 − 4	10 − 2
(9)	10 − 8 = 2	6 − 4 = 2	8 − 2 = 6	6 − 2 = 4	8 − 6	10 − 2 = 8	6 − 4 = 2	8 − 4 = 4
(10)	8 − 4	6 − 2	10 − 2 = 8	8 − 2 = 6	8 − 4 = 4	10 − 8 = 2	6 − 4 = 2	8 − 6 = 2
(11)	6 − 4	8 − 4	8 − 6 = 2	10 − 2	6 − 2	8 − 2	6 − 2	10 − 8

Remedial work: Rows 7–8, page 146.

HOW ADDITION HELPS SUBTRACTION

1. You know that 4 and 2 are 6. This tells you that 4 from 6 is 2. This also tells you that 2 from 6 is 4. You see that addition helps subtraction.

2. Ed forgets the answer for "2 from 9." So he thinks, "2 and what are 9?" He knows that 2 and 7 are 9. This tells him that 2 from 9 is 7.

3. Fred does not remember "5 from 7." So he thinks, "5 and what are 7?" He knows that 5 and 2 are 7. So 5 from 7 is 2.

4. If I forget "3 from 6," I say, "3 and 3 are 6." This shows that 3 from 6 is 3.

5. If I forget "2 from 8," I say, "2 and 6 are 8. So 2 from 8 is 6."

6. If I forget "6 from 8," I say, "6 and 2 are 8. So 6 from 8 is 2."

7. Jane forgets the answer for "8 from 10." She says, "8 and 2 are 10. So 8 from 10 is 2."

8. Ann forgets the answer for "2 from 10." She says, "2 and 8 are 10. So 2 from 10 is 8."

REVIEW OF SUBTRACTION

Subtract these numbers:

(1)	9 − 2 = 7	5 − 1 = 4	4 − 2 = 2	6 − 5 = 1	10 − 8 = 2	6 − 2 = 4	10 − 1 = 9	7 − 2 = 5
(2)	8 − 6 = 2	9 − 1 = 8	8 − 4 = 4	6 − 3 = 3	10 − 5 = 5	5 − 3 = 2	3 − 2 = 1	8 − 2 = 6
(3)	4 − 3 = 1	5 − 2 = 3	7 − 1 = 6	6 − 4 = 2	7 − 5 = 2	8 − 7 = 1	10 − 2 = 8	9 − 7 = 2

Remedial work: Rows 1–8, page 146.

TEST IN SUBTRACTION

Subtract these numbers:

(4)	6 − 5 = 1	5 − 2 = 3	2 − 1 = 1	3 − 2 = 1	6 − 3 = 3	5 − 4 = 1	8 − 6 = 2	10 − 1 = 9
(5)	4 − 3 = 1	7 − 2 = 5	3 − 1 = 2	9 − 7 = 2	9 − 1 = 8	8 − 4 = 4	6 − 1 = 5	10 − 5 = 5
(6)	9 − 2 = 7	7 − 1 = 6	10 − 9 = 1	8 − 7 = 1	6 − 2 = 4	4 − 2 = 2	7 − 5 = 2	9 − 8 = 1
(7)	5 − 3 = 2	8 − 2 = 6	10 − 8 = 2	4 − 1 = 3	8 − 1 = 7	7 − 6 = 1	6 − 4 = 2	10 − 2 = 8

Remedial work: Rows 1–8, page 146.

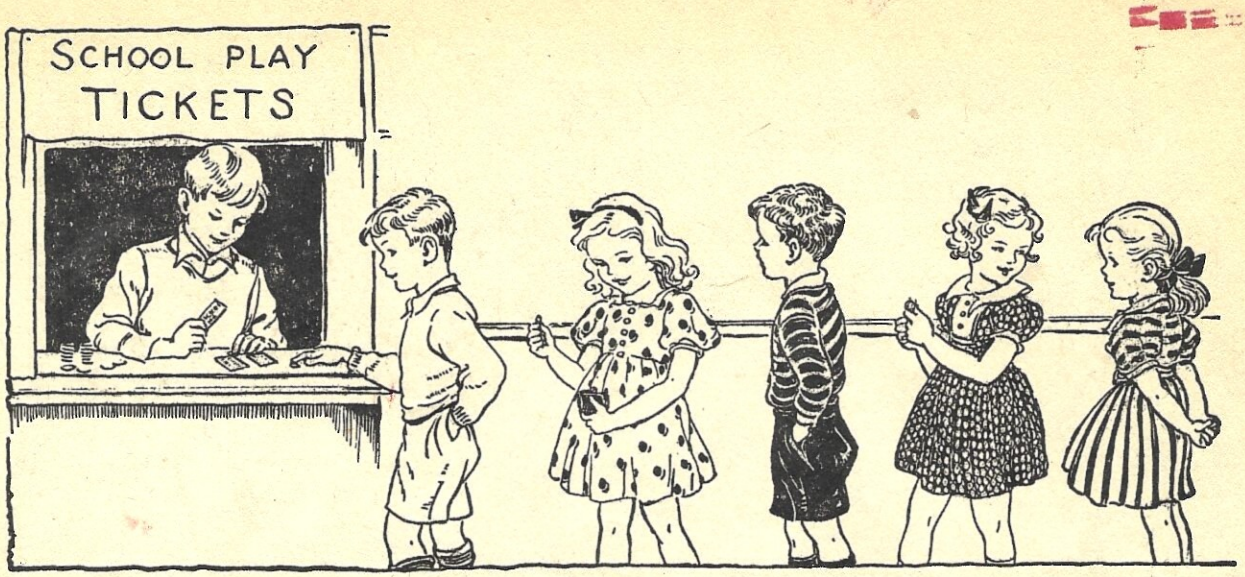
OCTOBER						
SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

NOVEMBER						
SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

THE CALENDAR

Use the calendar above to answer these:

1. October has 31 days. November has 30 days.
2. October has 1 day more than November.
3. Halloween comes the last day of October. The last day of October is October 31.
4. The days of the week are Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.
5. Thanksgiving Day comes on November 22. What day of the week is that? Thursday
6. Ann's birthday comes on October 6. What day of the week is that? Saturday
7. What day of the week is November 20? Tuesday
8. In one week there are 7 days.
9. There are 4 Saturdays in October.



Bob Mary Jim Jane Betty

BUYING TICKETS

The children are buying tickets for the play.

1. The first child in the line is ___*Bob*___.
2. The last child in the line is ___Betty___.
3. The fourth child in the line is ___Jane___.
4. The third child in the line is ___Jim___.
5. The fifth child in the line is ___Betty___.
6. The second child in the line is ___Mary___.
7. Mary is the ___*second*___ child in the line.
8. Jim is the ___third___ child in the line.
9. Betty is the ___fifth___ child in the line.
10. Jane is the ___fourth___ child in the line.
11. Bob is the ___first___ child in the line.

THROW THE DART

Each child throws 2 darts. If a dart hits a line, or if it does not hit a number, it counts *zero*. Zero means *nothing*. You write *zero* like this: 0.

1. Fred throws two darts. His first dart hits 5. The second one hits a line. His score is 5 because 5 and 0 are 5.

$$\begin{array}{r} 5 \\ 0 \\ \hline 5 \end{array} \qquad \begin{array}{r} 0 \\ 5 \\ \hline 5 \end{array}$$

5 and 0 are 5. 0 and 5 are 5.

Write each child's score below the line:

2.	*Ann*	*Jim*	*Fred*	*Jane*	*Ann*	*Jim*	*Fred*	*Jane*
	0	2	0	4	0	0	6	1
	7	0	0	0	9	3	0	0
	7	2	0	4	9	3	6	1

3.	*Ann*	*Jim*	*Fred*	*Jane*	*Ann*	*Jim*	*Fred*	*Jane*
	3	9	0	0	7	0	0	0
	0	0	6	4	0	2	0	8
	3	9	6	4	7	2	0	8

COUNTING ABOVE 100

Write the numbers from 100 to 179:

100	110	120	130	140	-----	-----	170
101	111	121	131	141	-----	-----	171
102	112	122	132	142	-----	-----	172
103	113	123	133	143	-----	-----	173
104	114	124	134	144	-----	-----	174
105	115	125	135	145	-----	-----	175
106	116	126	136	146	-----	-----	176
107	117	127	137	147	-----	-----	177
108	118	128	138	148	-----	-----	178
109	119	129	139	149	-----	-----	179

Count by 100's to 1000:

100 200 300 400 500 600
700 800 900 1000

Count by 10's from 100 to 200:

100 110 120 130 140 150
160 170 180 190 200

38

A BEAR STORY

1. Betty has 3 bears.

Bob has 3 bears.

Betty and Bob both have 6 bears.

3 and 3 are 6. 3 and 3 are 6.

2. Betty still has her 3 bears.

Bob gets 1 more bear, so he now has 4 bears.

Now Betty and Bob both have 7 bears.

3 and 4 are 7. 3 and 4 are 7.

3. 3 and 3 are 6. 3 and 4 are 7.

3 and 3 are 6. 3 and 4 are 7.

3 and 3 are 6. 3 and 4 are 7.

$\begin{array}{r} 3 \\ +\,3 \\ \hline 6 \end{array}$ $\begin{array}{r} 3 \\ +\,4 \\ \hline 7 \end{array}$

4. 3 and 4 are 7. 4 and 3 are 7.

3 and 4 are 7. 4 and 3 are 7.

3 and 4 are 7. 4 and 3 are 7.

$\begin{array}{r} 3 \\ +\,4 \\ \hline 7 \end{array}$ $\begin{array}{r} 4 \\ +\,3 \\ \hline 7 \end{array}$

---

3 and 3 are 6 helps you to learn that 3 and 4 are 7.

HELPING YOU TO REMEMBER

(1) 4 apples and 4 apples are 8 apples.
4 apples and 5 apples are 9 apples.
4 and 4 are 8. 4 and 5 are 9.

4 and 5 are 9. 5 and 4 are 9.
4 and 5 are 9. 5 and 4 are 9.

$\begin{array}{r} 4 \\ 4 \\ \hline 8 \end{array}$ $\begin{array}{r} 4 \\ 5 \\ \hline 9 \end{array}$ $\begin{array}{r} 4 \\ 5 \\ \hline 9 \end{array}$ $\begin{array}{r} 5 \\ 4 \\ \hline 9 \end{array}$

---

4 and 4 helps you to learn 4 and 5.

---

(2) 4 and 5 are 9, so 4 and 6 are 10.
4 and 5 are 9. 4 and 6 are 10.
4 and 5 are 9. 4 and 6 are 10.

4 and 6 are 10. 6 and 4 are 10.
4 and 6 are 10. 6 and 4 are 10.

$\begin{array}{r} 4 \\ 5 \\ \hline 9 \end{array}$ $\begin{array}{r} 4 \\ 6 \\ \hline 10 \end{array}$ $\begin{array}{r} 4 \\ 6 \\ \hline 10 \end{array}$ $\begin{array}{r} 6 \\ 4 \\ \hline 10 \end{array}$

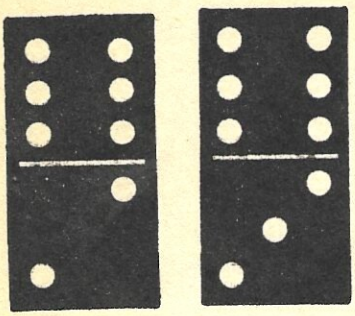
Add these numbers:

(3) $\begin{array}{r} 4 \\ 4 \\ \hline 8 \end{array}$ $\begin{array}{r} 5 \\ 4 \\ \hline 9 \end{array}$ $\begin{array}{r} 4 \\ 5 \\ \hline 9 \end{array}$ $\begin{array}{r} 3 \\ 3 \\ \hline 6 \end{array}$ $\begin{array}{r} 4 \\ 3 \\ \hline 7 \end{array}$ $\begin{array}{r} 3 \\ 4 \\ \hline 7 \end{array}$ $\begin{array}{r} 5 \\ 4 \\ \hline 9 \end{array}$ $\begin{array}{r} 6 \\ 4 \\ \hline 10 \end{array}$

(4) $\begin{array}{r} 4 \\ 5 \\ \hline 9 \end{array}$ $\begin{array}{r} 4 \\ 6 \\ \hline 10 \end{array}$ $\begin{array}{r} 3 \\ 4 \\ \hline 7 \end{array}$ $\begin{array}{r} 4 \\ 5 \\ \hline 9 \end{array}$ $\begin{array}{r} 6 \\ 4 \\ \hline 10 \end{array}$ $\begin{array}{r} 4 \\ 3 \\ \hline 7 \end{array}$ $\begin{array}{r} 5 \\ 4 \\ \hline 9 \end{array}$ $\begin{array}{r} 4 \\ 6 \\ \hline 10 \end{array}$

(5) $\begin{array}{r} 6 \\ 4 \\ \hline 10 \end{array}$ $\begin{array}{r} 4 \\ 3 \\ \hline 7 \end{array}$ $\begin{array}{r} 5 \\ 4 \\ \hline 9 \end{array}$ $\begin{array}{r} 4 \\ 6 \\ \hline 10 \end{array}$ $\begin{array}{r} 4 \\ 4 \\ \hline 8 \end{array}$ $\begin{array}{r} 3 \\ 4 \\ \hline 7 \end{array}$ $\begin{array}{r} 3 \\ 3 \\ \hline 6 \end{array}$ $\begin{array}{r} 4 \\ 5 \\ \hline 9 \end{array}$

BOB AND BETTY DO SOME THINKING



1. Bob says, "How many are 6 and 3? I can find out by counting, but that takes too much time." Bob says, "I know 6 and 2 are 8, so 6 and 3 must be 9."

6 and 2 are 8.
6 and 2 are 8.
6 and 3 are 9.

6 and 3 are 9.
6 and 3 are 9.
3 and 6 are 9.

$$\begin{array}{r} 6 \\ 3 \\ \hline 9 \end{array} \qquad \begin{array}{r} 3 \\ 6 \\ \hline 9 \end{array}$$

2. Betty knows that 5 and 2 are 7. This helps her to see that 5 and 3 are 8.

5 and 2 are 7.
5 and 3 are 8.
3 and 5 are 8.

5 and 3 are 8.
3 and 5 are 8.
5 and 3 are 8.

$$\begin{array}{r} 5 \\ 3 \\ \hline 8 \end{array} \qquad \begin{array}{r} 3 \\ 5 \\ \hline 8 \end{array}$$

3. Betty knows that 7 and 2 are 9. This helps her to see that 7 and 3 are 10.

7 and 2 are 9.
7 and 3 are 10.
3 and 7 are 10.

7 and 3 are 10.
3 and 7 are 10.
7 and 3 are 10.

$$\begin{array}{r} 7 \\ 3 \\ \hline 10 \end{array} \qquad \begin{array}{r} 3 \\ 7 \\ \hline 10 \end{array}$$

4. 3 and 5 are 8.
3 and 7 are 10.
6 and 3 are 9.

7 and 3 are 10.
3 and 6 are 9.
5 and 3 are 8.

$$\begin{array}{r} 3 \\ 5 \\ \hline 8 \end{array} \qquad \begin{array}{r} 3 \\ 7 \\ \hline 10 \end{array}$$

ADDING NUMBERS

(1) 5 and 3 are 8.
3 and 4 are 7.

(2) 3 and 7 are 10.
4 and 6 are 10.

(3) 4 and 5 are 9.
5 and 4 are 9.

(4) 3 and 6 are 9.
7 and 3 are 10.

(5) 4 and 4 are 8.
3 and 3 are 6.

(6) 3 and 5 are 8.
6 and 4 are 10.

(7) 6 and 3 are 9.
4 and 3 are 7.

Add these numbers:

(8)

4	6	2	5	6	3	4	3
5	3	6	3	4	7	3	0
9	9	8	8	10	10	7	3

(9)

4	7	3	2	3	2	3	4
6	3	4	7	5	8	6	5
10	10	7	9	8	10	9	9

(10)

3	2	5	0	3	4	6	3
7	4	4	0	6	3	4	5
10	6	9	0	9	7	10	8

(11)

5	2	6	4	5	7	3	0
3	5	3	6	4	3	4	5
8	7	9	10	9	10	7	5

REVIEW OF ADDITION

Add these numbers:

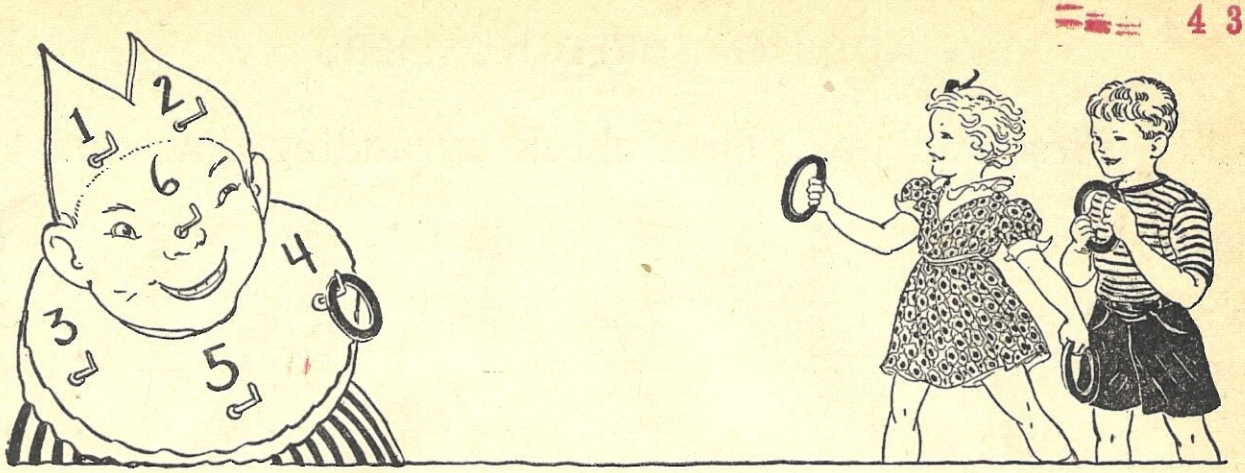
(1)	3 5 8	0 6 6	4 6 10	3 7 10	4 3 7	3 6 9	7 3 10	5 4 9
(2)	5 3 8	3 4 7	3 7 10	4 3 7	3 6 9	6 4 10	4 5 9	7 0 7
(3)	6 4 10	3 4 7	0 0 0	4 6 10	3 5 8	5 4 9	4 5 9	6 3 9

Remedial work: Rows 1–8, page 144.

TEST IN ADDITION

Add these numbers:

(4)	7 3 10	0 4 4	3 6 9	7 0 7	5 4 9	0 6 6	3 5 8	0 2 2
(5)	2 0 2	3 7 10	0 8 8	3 0 3	3 4 7	5 0 5	0 1 1	4 6 10
(6)	9 0 9	0 0 0	5 3 8	8 0 8	0 5 5	3 7 10	6 3 9	0 3 3
(7)	4 3 7	0 7 7	4 0 4	6 4 10	1 0 1	0 9 9	4 5 9	6 0 6



THE FUNNY CLOWN

Jane throws rings on 4, 2, and 3. To find her score, add the numbers. Begin with 3 and add up. Think "5, 9." Then add down to see if you are right.

$$\begin{array}{r} 4 \\ 2 \\ 3 \\ \hline 9 \end{array}$$

Find each child's score:

1.

Jane	*Jim*	*Bob*	*Ann*	*Jane*	*Jim*	*Bob*	*Ann*
5	6	1	5	3	4	0	3
1	1	2	1	4	3	6	6
4	3	6	3	0	1	4	1
10	10	9	9	7	8	10	10

2.

Jane	*Jim*	*Bob*	*Ann*	*Jane*	*Jim*	*Bob*	*Ann*
2	4	2	3	1	0	2	3
1	0	3	4	4	0	4	5
3	5	5	2	3	4	3	2
6	9	10	9	8	4	9	10

3.

Jane	*Jim*	*Bob*	*Ann*	*Jane*	*Jim*	*Bob*	*Ann*
1	5	3	5	3	1	4	2
4	1	5	4	0	6	1	1
2	2	1	1	2	2	3	4
7	8	9	10	5	9	8	7

ADDING THREE NUMBERS

Add. First add up. Then check by adding down:

(1)	1	2	4	9	2	8	2	6
	2	5	3	0	1	1	4	2
	7	3	3	1	6	0	4	1
	10	10	10	10	9	9	10	9
(2)	2	4	7	3	2	5	4	3
	4	5	0	5	2	1	3	3
	3	1	2	2	2	1	1	1
(3)	3	2	4	2	1	7	6	3
	1	5	2	3	2	1	2	4
	4	1	3	3	6	2	2	2
	8	8	9	8	9	10	10	9
(4)	2	1	0	1	8	3	3	3
	2	5	7	6	0	2	1	6
	5	4	2	2	2	3	5	1
	9	10	8	9	10			
(5)	2	4	3	0	1	2	3	2
	6	4	2	5	2	2	3	7
	1	1	5	5	5	6	3	1
	9	9	10	10	8	10	9	10
(6)	4	2	1	5	4	1	7	4
	3	1	1	1	2	4	3	1
	2	3	8	2	4	4	0	2
	9	6	10	8	10	9	10	7

ADDING THREE NUMBERS

Add. First add up. Then check by adding down:

(1)	3 1 6 10	4 2 2 8	1 6 1 8	0 8 2 10	3 3 2 8	8 1 1 10	3 3 4 10	5 0 5 10
(2)	2 4 2 8	4 1 5 10	6 3 1 10	2 2 3 7	1 7 1 9	5 1 3 9	4 2 1 7	2 3 4 9
(3)	2 6 2 10	5 2 1 8	4 1 1 6	2 1 4 7	6 1 2 9	2 2 4 8	0 9 1 10	3 1 3 7
(4)	0 7 1 8	4 1 4 9	5 2 2 9	1 1 7 9	3 4 3 10	8 0 1 9	1 3 6 10	2 1 7 10
(5)	2 3 2 7	1 3 4 8	7 2 1 10	4 1 3 8	5 3 2 10	1 7 2 10	3 2 4 9	1 5 2 8
(6)	3 4 1 8	2 3 5 10	2 3 1 6	4 4 2 10	3 2 2 7	7 1 1 9	2 5 2 9	3 5 1 9

Remedial work: Rows 1–2, page 148.

THE MONTHS OF THE YEAR

1. These are the months of the year:

January	May	September
February	June	October
March	July	November
April	August	December

2. How many months are there in a year? 12

3. How many days are there in December? 31

4. In what month does your birthday come? April

5. Write the numbers 1 to 31 below to make a calendar for December of this year:

DECEMBER						
SUN.	MON.	TUE.	WED.	THU.	FRI.	SAT.
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

6. Christmas Day comes on December 25.

7. On what day of the week does Christmas come? Sun

THE DOLL'S HOUSE

The children made a doll's house. Then they bought things for it.

1. Jane paid 25¢ for a mother doll and 20¢ for a girl doll. She paid 45¢ in all.

$$\begin{array}{r} 25 \\ 20 \\ \hline 45¢ \end{array}$$

2. Bob paid 22¢ for a clock and 24¢ for a boy doll. He paid 46¢ in all.

$$\begin{array}{r} 22 \\ 24 \\ \hline 46¢ \end{array}$$

3. Betty paid 24¢ for tables and 33¢ for chairs. She paid 57¢ in all.

$$\begin{array}{r} 24 \\ 33 \\ \hline 57¢ \end{array}$$

4. Fred paid 40¢ for beds and 10¢ for pictures. He paid 50¢ in all.

$$\begin{array}{r} 40 \\ 10 \\ \hline 50¢ \end{array}$$

5. Ann paid 35¢ for dishes and 32¢ for the chair by the clock. She paid 67¢ in all.

$$\begin{array}{r} 35 \\ 32 \\ \hline \end{array}$$

ADDING LARGER NUMBERS

Add these numbers:

(1)	41 50 91	53 31 84	12 82 94	10 23 33	15 14 29	36 50 86	54 10 64
(2)	71 23 94	50 25 75	33 15 48	24 62 86	18 60 78	27 21 48	50 18 68
(3)	14 71 85	31 22 53	42 34 76	35 51 86	36 11 47	60 19 79	39 60 99
(4)	41 45 86	15 30 45	42 15 57	50 42 92	41 25 66	70 20 90	41 14 55
(5)	42 52 94	13 14 27	75 13 88	15 64 79	23 43 66	11 91 102	80 27 107
(6)	31 76 107	43 62 105	11 57 68	62 23 85	10 96 106	37 40 77	16 92 108
(7)	63 41 104	87 12 99	52 50 102	20 32 52	54 54 108	33 72 105	61 11 72
(8)	86 23 109	79 10 89	51 58 109	48 61 109	74 32 106	33 36 69	82 20 102

Remedial work: Rows 1–4, page 149.

Add. First add up. Then check by adding down:

(1)	3 3 3 9	4 6 0 10	2 5 1 8	1 4 3 8	3 3 4 10	2 1 5 8	1 8 1 10	1 6 3 10
(2)	1 3 5 9	7 2 1 10	1 0 8 9	5 3 2 10	2 2 6 10	0 4 4 8	3 1 3 7	5 4 1 10
(3)	4 2 3 9	1 0 9 10	4 1 1 6	6 1 2 9	3 2 5 10	1 7 2 10	2 1 4 7	0 4 5 9

Remedial work: Rows 1–2, page 148.

(24) Use Table C.

Add these numbers:

(4)	25 64 89	37 51 88	60 30 90	52 22 74	22 75 97	71 35 106	54 52 106
(5)	51 34 85	46 61 107	38 20 58	33 76 109	41 31 72	74 24 94	60 23 83
(6)	21 46 67	93 13 106	24 85 109	38 41 79	81 23 104	17 90 107	62 41 103

Remedial work: Rows 1–4, page 149.

(21) Use Table F

USING ZERO IN SUBTRACTION

(1) Mary's cat had 4 kittens. Mary took the 4 kittens away from the cat. How many kittens did the cat have left? 0

4 from 4 leaves 0. 4 from 4 is 0.

$$\begin{array}{r} 4 \\ -4 \\ \hline 0 \end{array}$$

(2) Fred's cat had 4 kittens. Fred did not take any kittens away from his cat. How many kittens did the cat have left? 4

0 from 4 leaves 4. 0 from 4 is 4.

$$\begin{array}{r} 4 \\ -0 \\ \hline 4 \end{array}$$

(3) 3 from 3 is 0. 0 from 3 is 3.

0 from 6 is 0. 6 from 6 is 0.

5 from 5 is 0. 0 from 0 is 0.

Subtract these numbers:

(4)

9	6	0	4	7	5	8	3
−0	−6	−0	−0	−0	−0	−8	−0
9	0	0	4	7	5	0	3

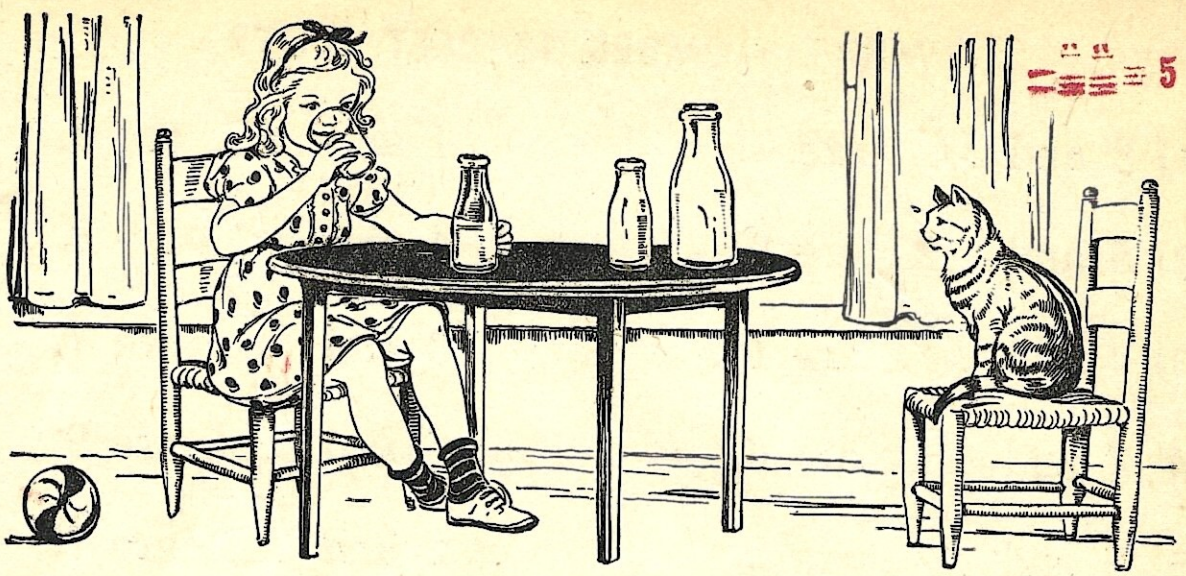
(5)

4	2	8	1	5	0	1	9
−4	−0	−0	−0	−0	−0	−1	−9
0	2	8	1	5	0	0	0

(6)

0	6	2	7	3	9	5	8
−0	−0	−2	−7	−3	−0	−5	−0
0	6	0	0	0	9	0	8

Remedial work: Rows 1–3, page 147.



PINT AND QUART

1. Mary's mother put 3 bottles of milk on the table. The large bottle holds 1 quart of milk. Each small bottle holds 1 pint of milk.

   1 quart makes 2 pints.

2. Mary is drinking a glass of milk. She got the milk from one of the pint bottles. There is 1 glass of milk left in the bottle. A pint of milk makes 2 glasses.

3. Mary drinks 2 pints of milk a day.
   She drinks 1 quart of milk a day.
   She drinks 4 glasses of milk a day.

4. 1 quart = 2 pints.
   1 quart = 4 glasses.
   1 pint = 2 glasses.
   2 pints = 1 quart.
   2 glasses = 1 pint.
   4 glasses = 1 quart.

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WHAT NUMBER IS LEFT OUT?

(1) 3 and 4 are 7. 4 and 5 are 9.

(2) 5 and 4 are 9. 4 and 4 are 8.

(3) 4 and 6 are 10. 3 and 4 are 7.

(4) 3 and 3 are 6. 5 and 4 are 9.

(5) 2 and 7 are 9. 2 and 5 are 7.

(6) 4 and 3 are 7. 6 and 4 are 10.

(7) 4 and 5 are 9. 4 and 3 are 7.

(8) 6 and 4 are 10. 4 and 6 are 10.

Find the number that is left out. In the first one write 4 because 5 and 4 are 9:

(9)

5	2	7	4	3	6	2	4
4	8	2	4	4	4	3	5
9	10	9	8	7	10	5	9

(10)

2	4	3	2	4	5	2	4
4	6	3	5	4	4	7	3
6	10	6	7	8	9	9	7

(11)

6	3	8	4	3	4	2	4
4	4	2	5	3	3	6	6
10	7	10	9	6	7	8	10

Remedial work: Rows 1–5, page 145.

PLAYING STORE

1. Mary has 7¢.
She buys a bag of nuts for 3¢.
Then Mary has 4 ¢ left.
3 from 7 is 4. 4 from 7 is 3.

$$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array} \qquad \begin{array}{r} 7 \\ -4 \\ \hline 3 \end{array}$$

2. Jim has 10¢. He buys a bag of candy for 4¢. He has 6 ¢ left.
4 from 10 is 6. 6 from 10 is 4.

$$\begin{array}{r} 10 \\ -4 \\ \hline 6 \end{array} \qquad \begin{array}{r} 10 \\ -6 \\ \hline 4 \end{array}$$

3. Ann has 9¢. She buys some cookies for 5¢. She has 4 ¢ left.
5 from 9 is 4. 4 from 9 is 5.
4 from 9 is 5. 5 from 9 is 4.

$$\begin{array}{r} 9 \\ -5 \\ \hline 4 \end{array} \qquad \begin{array}{r} 9 \\ -4 \\ \hline 5 \end{array}$$

If you forget 5 from 9, think "5 and what are 9?"

Subtract these numbers. The first example is 5 from 9. If you cannot do it, think "5 and *what* are 9?" You know that 5 and 4 are 9, so 5 from 9 is 4.

(1)	9 − 5 = 4	7 − 4 = 3	10 − 6 = 4	8 − 4 = 4	9 − 4 = 5	6 − 3 = 3	7 − 3 = 4	10 − 4 = 6
(2)	9 − 7 = 2	7 − 5 = 2	10 − 6 = 4	5 − 3 = 2	9 − 4 = 5	7 − 3 = 4	6 − 4 = 2	8 − 4 = 4
(3)	10 − 8 = 2	9 − 5 = 4	7 − 4 = 3	8 − 2 = 6	10 − 4 = 6	5 − 2 = 3	8 − 6 = 2	9 − 4 = 5

Remedial work: Rows 4–5, page 147.

(4) 4 from 7 is 3 because 4 and 3 are 7.

(5) 5 from 9 is 4 because 5 and 4 are 9.

(6) 3 from 6 is 3 because 3 and 3 are 6.

(7) 3 from 7 is 4 because 3 and 4 are 7.

(8) 4 from 9 is 5 because 4 and 5 are 9.

(9) 4 from 10 is 6 because 4 and 6 are 10.

(10) 6 from 10 is 4 because 6 and 4 are 10.

GETTING READY TO SUBTRACT

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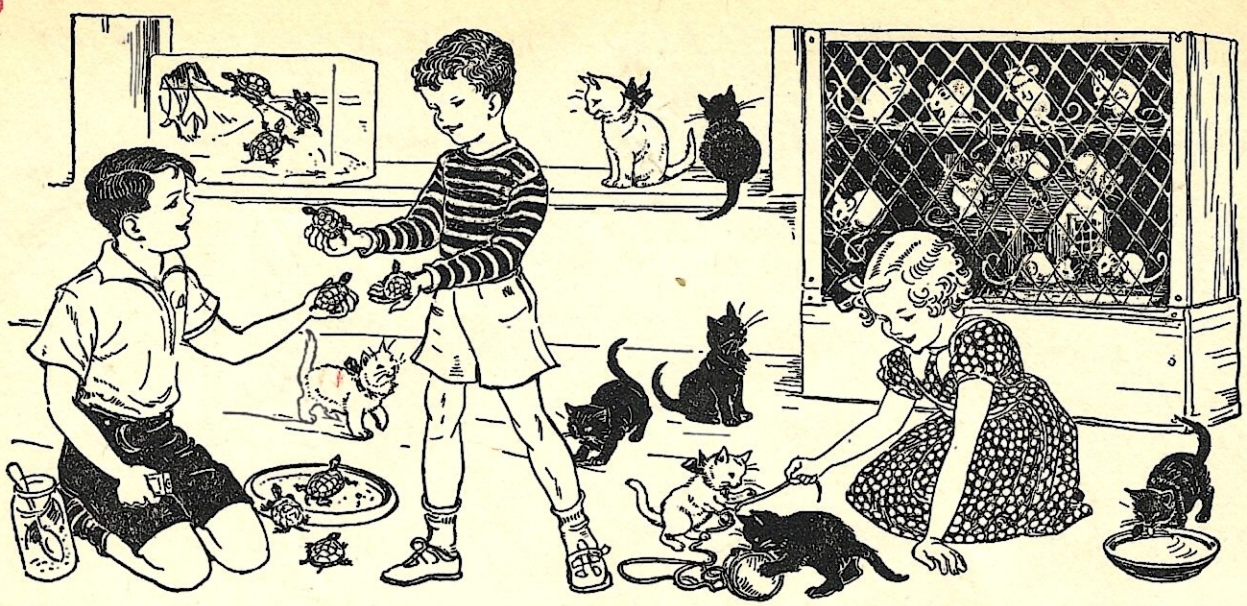
(1) 6 and 3 are 9.		7 and 3 are 10.
(2) 7 and 3 are 10.		5 and 4 are 9.
(3) 3 and 5 are 8.		3 and 6 are 9.
(4) 3 and 4 are 7.		4 and 6 are 10.
(5) 4 and 5 are 9.		3 and 7 are 10.
(6) 3 and 6 are 9.		5 and 3 are 8.
(7) 5 and 3 are 8.		6 and 3 are 9.
(8) 3 and 7 are 10.		3 and 5 are 8.

Find the number that is left out. In the first one write 3 because 6 and 3 are 9:

(9)	6 + 3 = 9	3 + 7 = 10	4 + 3 = 7	5 + 3 = 8	7 + 3 = 10	4 + 5 = 9	3 + 5 = 8	5 + 4 = 9
(10)	3 + 6 = 9	4 + 6 = 10	5 + 4 = 9	6 + 4 = 10	3 + 4 = 7	6 + 3 = 9	4 + 6 = 10	3 + 7 = 10
(11)	4 + 3 = 7	5 + 3 = 8	4 + 5 = 9	7 + 3 = 10	3 + 6 = 9	3 + 4 = 7	6 + 4 = 10	3 + 5 = 8

Remedial work: Rows 5–6, page 145.



FRED AND HIS PETS

1. Fred has 9 turtles. He gives 3 turtles to Jim. He has 6 turtles left.
   3 from 9 is 6. 6 from 9 is 3.

$$\begin{array}{r} 9 \\ -3 \\ \hline 6 \end{array} \qquad \begin{array}{r} 9 \\ -6 \\ \hline 3 \end{array}$$

2. Fred has 8 kittens. He gives 3 kittens to Jane. He has 5 kittens left.
   3 from 8 is 5. 5 from 8 is 3.

$$\begin{array}{r} 8 \\ -3 \\ \hline 5 \end{array} \qquad \begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$$

If you forget 3 from 8, think "3 and what are 8?"

3. Fred has 10 white mice. He will give 3 to Bob. He will have 7 mice left.
   3 from 10 is 7. 7 from 10 is 3.

$$\begin{array}{r} 10 \\ -3 \\ \hline 7 \end{array} \qquad \begin{array}{r} 10 \\ -7 \\ \hline 3 \end{array}$$

If you forget 3 from 10, think "3 and what are 10?"

SUBTRACTING NUMBERS

(1) 6 from 9 is 3 because 6 and 3 are 9.

(2) 5 from 8 is 3 because 5 and 3 are 8.

(3) 4 from 7 is 3 because 4 and 3 are 7.

(4) 3 from 9 is 6 because 3 and 6 are 9.

(5) 3 from 8 is 5 because 3 and 5 are 8.

(6) 7 from 10 is 3 because 7 and 3 are 10.

(7) 3 from 10 is 7 because 3 and 7 are 10.

Subtract these numbers. If you cannot do the first one, think "5 and 3 are 8."

(8)	8 − 5 = 3	9 − 3 = 6	10 − 3 = 7	9 − 4 = 5	8 − 3 = 5	9 − 6 = 3	7 − 3 = 4	10 − 7 = 3
(9)	8 − 3 = 5	9 − 6 = 3	10 − 7 = 3	6 − 6 = 0	9 − 3 = 6	8 − 5 = 3	9 − 5 = 4	10 − 3 = 7
(10)	9 − 3 = 6	8 − 3 = 5	10 − 4 = 6	8 − 0 = 8	9 − 6 = 3	7 − 7 = 0	8 − 5 = 3	10 − 6 = 4

Remedial work: Rows 4–8, page 147.

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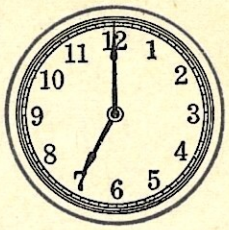
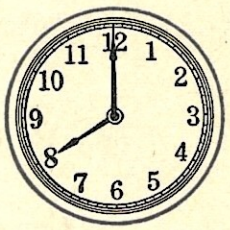
TELLING TIME

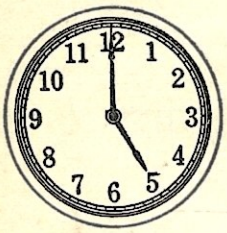
This clock says 7 o'clock.
The short hand of the clock is at 7.
The long hand of the clock is at 12.



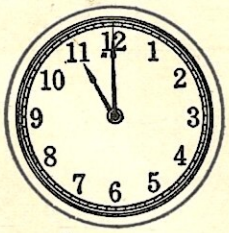
This clock says 8 o'clock.
The short hand of the clock is at 8.
The long hand of the clock is at 12.



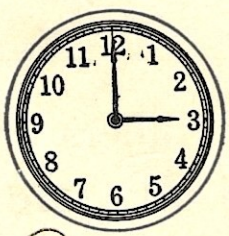
Under each clock write the time it gives:



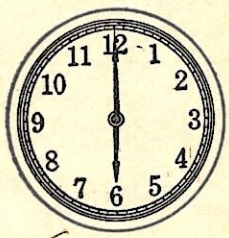
5 o'clock



11 o'clock

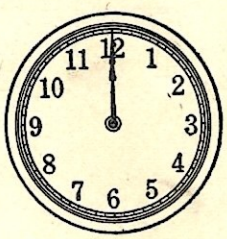


2 o'clock



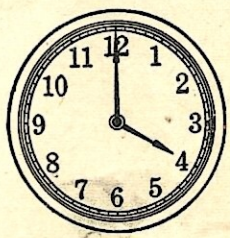
6 o'clock

10 o'clock



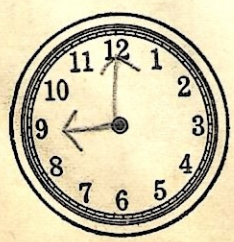
12 o'clock

1 o'clock

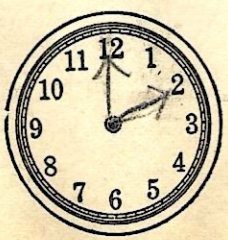


4 o'clock

Draw hands on each clock to show the time under it:

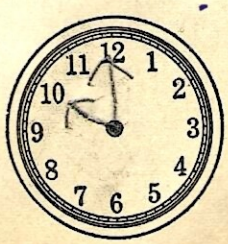


9 o'clock



2 o'clock

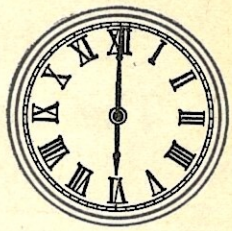
5 o'clock



10 o'clock

ROMAN NUMBERS

This clock has Roman numbers. Does your school clock have Roman numbers? no



Roman numbers are also used to number the chapters of books.

Learn these new numbers:

I	II	III	IIII	V	VI
1	2	3	IV 4	5	6
VII	VIII	IX	X	XI	XII
7	8	9	10	11	12

You can write 4 in two ways like this: IIII or IV.

Tell what each Roman number says:

VI = 6 XII = 12 IX = 9 X = 10 XI = 11

IX = 9 VIII = 8 IV = 4 I = 1 VII = 7

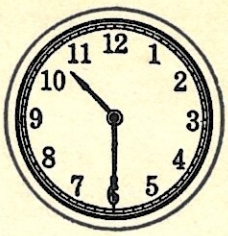
II = 2 IIII = 4 XI = 11 V = 5 III = 3

The last chapter in Ann's book is Chapter VIII. How many chapters has Ann's book? VIII

The last chapter in Bob's book is Chapter XI. How many chapters has Bob's book? XI

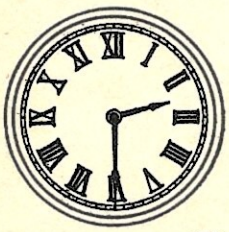
TELLING TIME

This clock says half past 10.
The short hand is a little past 10.
The long hand is at 6.

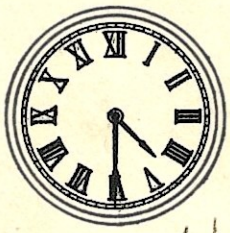


When the long hand is at 6, the clock says "half past."

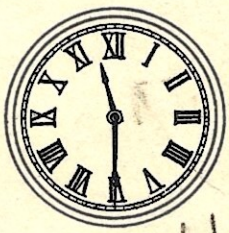
Under each clock write the time it gives:



half past 2



half past 4



half past 11

Draw hands on each clock to show the time under it:

half past 9

half past 1

half past 8

half past 7

half past 3

half past 5

COUNTING

61

1. Count by 10's from 100 to 300:

100 110 120 130 140 150 160
170 180 190 200 210 220 230
240 250 260 270 280 290 300

2. Count by 5's from 100 to 200:

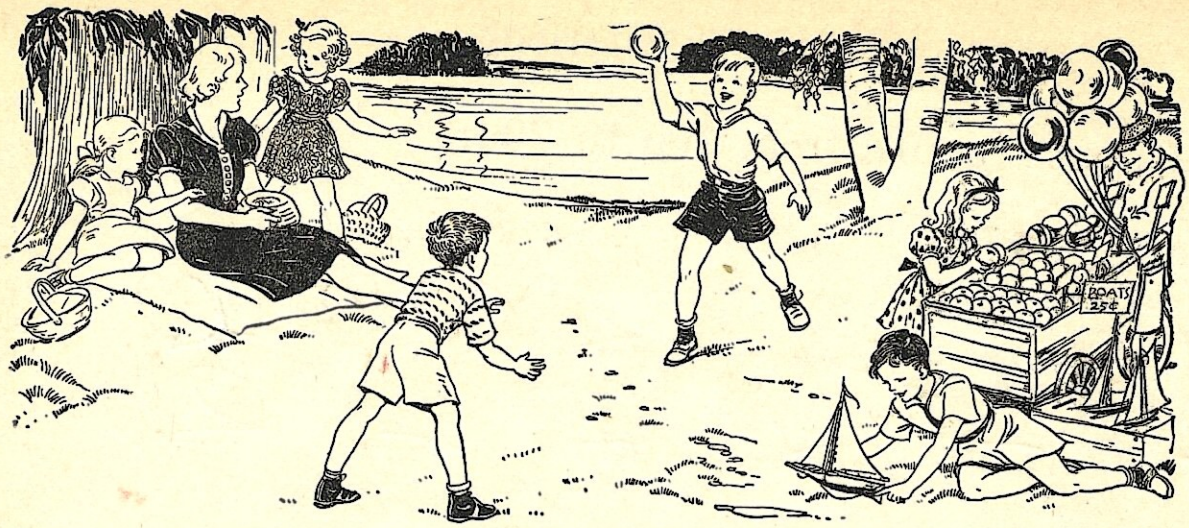
100 105 110 115 120 125 130
135 140 145 150 155 160 165
170 175 180 185 190 195 200

3. Count by 2's from 20 to 100:

20 22 24 26 28 30 32
34 36 38 40 42 44 46
48 50 52 54 56 58 60
62 64 66 68 70 72 74
76 78 80 82 84 86 88
90 92 94 96 98 100

4. Count by 100's to 1000:

100 200 300 400 500 600 700
800 900 1000



THE PICNIC

Miss Ball took 6 children on a picnic.

1. Betty had 27¢. She paid 13¢ for a big ball. She had 14¢ left.

$$\begin{array}{r} 27 \\ -13 \\ \hline 14 \end{array}$$

2. Bob had 39¢. He paid 25¢ for a toy boat. He had 14¢ left.

$$\begin{array}{r} 39 \\ -25 \\ \hline 14 \end{array}$$

3. Jane had 33¢. She paid 12¢ for some apples. She had 21¢ left.

$$\begin{array}{r} 33 \\ -12 \\ \hline 21 \end{array}$$

4. Jim and Fred together had 67¢. They paid 40¢ for a boat ride. They had 27¢ left.

$$\begin{array}{r} 67 \\ -40 \\ \hline 27 \end{array}$$

5. Mary had 35¢. She paid 15¢ for a balloon. She had 20¢ left.

$$\begin{array}{r} 35 \\ -15 \\ \hline 20 \end{array}$$

6. Miss Ball had 98¢. She paid 25¢ for oranges for the children. She had 73¢ left.

$$\begin{array}{r} 98 \\ -25 \\ \hline 73 \end{array}$$

SUBTRACTING LARGER NUMBERS

Subtract these numbers:

(1)	92 11 81	73 60 13	56 15 41	29 19 10	98 66 32	74 23 51	54 42 12
(2)	65 15 50	77 30 47	59 23 36	35 12 23	66 23 43	83 13 70	89 58 31
(3)	97 71 26	89 42 47	91 81 10	95 20 75	39 25 14	76 41 35	42 32 10
(4)	48 23 25	67 54 13	66 32 34	59 31 28	47 15 32	83 71 12	86 31 55

Remedial work: Rows 1–4, page 150.

---

(5) Ann's mother gave her 25¢. Ann bought a ball for 15¢. She had 10¢ left.

25
15
10

(6) Bob had 70 marbles. He gave 10 marbles to Betty. Bob had 60 marbles left.

70
10
60

(7) Jim had 35 tickets to sell. He sold 21 tickets. Jim had 14 tickets left.

35
21
14

SUBTRACTING LARGER NUMBERS

Subtract these numbers:

(1)	64 − 51 = 13	45 − 34 = 11	77 − 66 = 11	68 − 11 = 57	70 − 40 = 30	76 − 55 = 21	53 − 41 = 12
(2)	72 − 42 = 30	89 − 13 = 76	84 − 43 = 41	39 − 19 = 20	28 − 12 = 16	74 − 24 = 50	89 − 64 = 25
(3)	67 − 24 = 43	68 − 40 = 28	58 − 52 = 06	45 − 21 = 24	65 − 33 = 32	92 − 60 = 32	28 − 18 = 10
(4)	97 − 30 = 67	46 − 12 = 34	78 − 34 = 44	96 − 26 = 70	49 − 41 = 08	79 − 17 = 62	97 − 43 = 54
(5)	77 − 13 = 64	58 − 16 = 42	89 − 56 = 33	85 − 65 = 20	35 − 24 = 11	94 − 50 = 44	68 − 47 = 21
(6)	77 − 32 = 45	69 − 68 = 01	79 − 57 = 22	99 − 45 = 54	59 − 20 = 39	49 − 34 = 15	38 − 32 = 06
(7)	56 − 34 = 22	95 − 20 = 75	89 − 27 = 62	25 − 22 = 03	93 − 63 = 30	99 − 73 = 26	51 − 40 = 11

Remedial work: Rows 1–4, page 150.

TEST IN SUBTRACTION

Subtract these numbers:

(1)	6 − 5 = 1	9 − 3 = 6	8 − 8 = 0	5 − 1 = 4	6 − 3 = 3	0 − 0 = 0	10 − 9 = 1	6 − 0 = 6
(2)	4 − 4 = 0	3 − 1 = 2	5 − 2 = 3	5 − 0 = 5	4 − 1 = 3	7 − 2 = 5	10 − 5 = 5	8 − 7 = 1
(3)	9 − 1 = 8	6 − 2 = 4	1 − 1 = 0	9 − 7 = 2	7 − 0 = 7	9 − 4 = 5	8 − 3 = 5	10 − 2 = 8
(4)	7 − 4 = 3	9 − 9 = 0	7 − 5 = 2	2 − 0 = 2	8 − 6 = 2	7 − 3 = 4	4 − 0 = 4	10 − 6 = 4
(5)	6 − 6 = 0	8 − 2 = 6	3 − 0 = 3	8 − 1 = 7	5 − 4 = 1	7 − 7 = 0	4 − 3 = 1	9 − 5 = 4
(6)	8 − 5 = 3	3 − 2 = 1	10 − 3 = 7	5 − 5 = 0	7 − 1 = 6	9 − 0 = 9	10 − 8 = 2	2 − 1 = 1
(7)	9 − 2 = 7	8 − 0 = 8	5 − 3 = 2	9 − 8 = 1	8 − 4 = 4	9 − 6 = 3	2 − 2 = 0	10 − 7 = 3
(8)	1 − 0 = 1	6 − 4 = 2	7 − 6 = 1	3 − 3 = 0	6 − 1 = 5	4 − 2 = 2	10 − 1 = 9	10 − 4 = 6

Remedial work: Rows 1–8, pages 146 and 147.

68

QUARTER AND HALF DOLLAR

Nickel
5¢

Dime
10¢

Quarter
25¢

Half Dollar
50¢

25 cents make 1 quarter.
50 cents make 1 half dollar.
100 cents make 1 dollar.

1. Count these nickels by 5's to find how many cents they make. 5 nickels make 25¢.

A quarter is the same as 25¢.
A quarter is the same as 5 nickels.

2. Count these dimes by 10's. 5 dimes make 50¢.

A half dollar is the same as 50¢.
A half dollar is the same as 5 dimes.

3. A half dollar is the same as 2 quarters.
A dollar is the same as 2 half dollars.

COUNTING MONEY

1. Count these nickels by 5's to see how many cents they make. 10 nickels make 50¢.

1 half dollar is the same as 50¢.

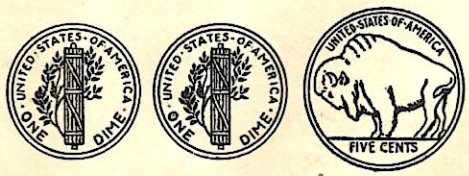
1 half dollar is the same as 10 nickels.

2. Count these dimes by 10's to see how many cents they make. 10 dimes make 100¢.

1 dollar is the same as 100¢.

1 dollar is the same as 10 dimes.

3. These 2 dimes and 1 nickel make 25¢.

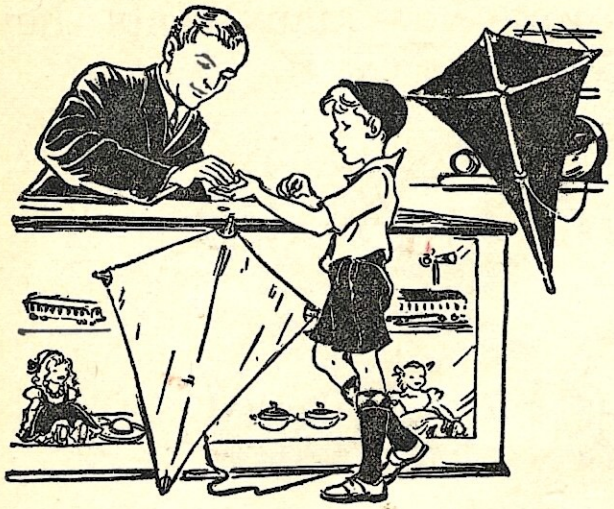


2 dimes and 1 nickel make 1 quarter.

1 dime and 2 nickels make 1 quarter.

X 70

MAKING CHANGE



Ed buys a toy for 7¢. He gives the man 10¢. He gets back 3¢. The 3¢ Ed gets back is his change. Ed says his change is right because 7¢ and 3¢ make 10¢. Do you know the easy way to make change?

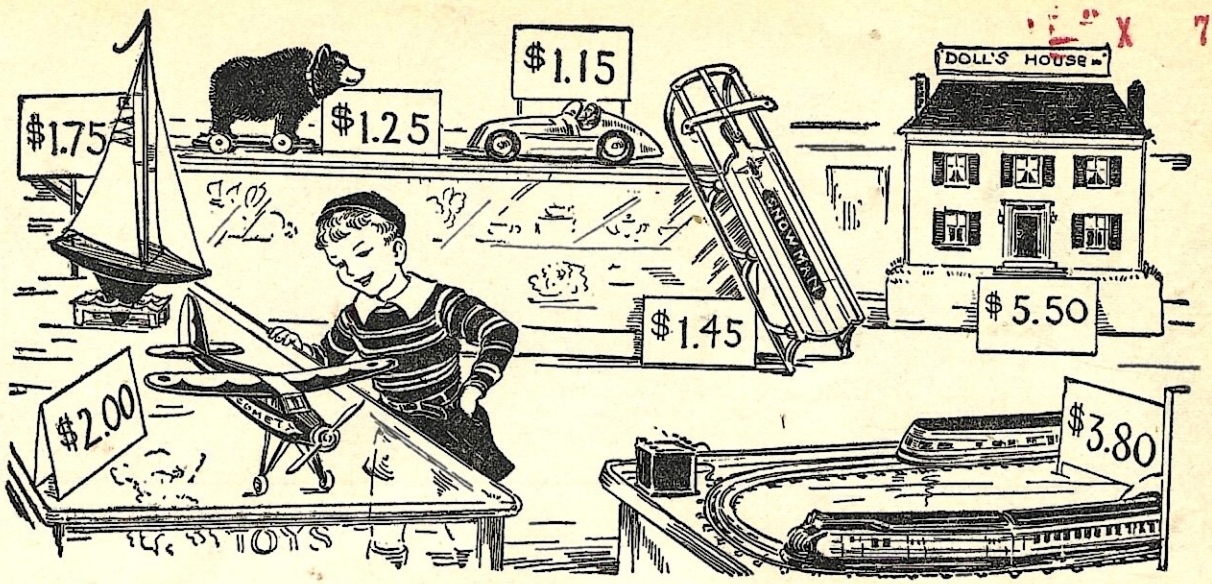
1. Ann buys a doll for 8¢. She gives the man 10¢. She gets back 2 ¢ in change. The change is right because 8 and 2 are 10.

2. Bob buys a ball for 4¢. He gives the man 5¢. He gets back 1 ¢ in change. The change is right because 4 and 1 are 5.

3. Mary buys some candy for 6¢. She gives the man 10¢. She gets back 4 ¢ in change. The change is right because 6 and 4 are 10.

4. Betty buys a pencil for 5¢. She gives the man a dime. A dime is 10 ¢. Her change is 5 ¢. The change is right because 5 and 5 are 10.

5. Jim buys some nuts for 3¢. He gives a nickel to the man. A nickel is 5 ¢. His change is 2 ¢.



AT THE TOY STORE

1. $3 means 3 dollars. $1 means 1 dollar.
   $2.25 means 2 dollars and 25 cents.

2. Look at the toys. Write how much each toy costs:

bear $1.25 doll house $5.50

sled $1.45 automobile $1.15

boat $1.75 airplane $2.00

Answer by drawing a line under *Yes* or *No:*

3. Does the doll house cost the most? **Yes** No

4. Jim has $3. Can he buy the train? Yes **No**

5. Jane has $2. Can she buy the bear? **Yes** No

6. Bob has $2. Can he buy the boat? **Yes** No

7. Betty has $1. Can she buy the sled? Yes **No**

X 72

SAVING MONEY

The children are showing their father how many cents they have saved this week.

1. Betty has saved 6¢. This makes Father happy. So he gives her 6¢ more.
Betty now has 12¢. 6 and 6 are 12.

$$\begin{array}{r} 6 \\ 6 \\ \hline 12 \end{array}$$

2. Bob has saved 7¢. Father is happy and gives Bob 7¢ more.
Bob now has 14¢. 7 and 7 are 14.

$$\begin{array}{r} 7 \\ 7 \\ \hline 14 \end{array}$$

3. Ann has saved 8¢. This makes Father happy. He gives her 8¢ more.
Ann now has 16¢. 8 and 8 are 16.

$$\begin{array}{r} 8 \\ 8 \\ \hline 16 \end{array}$$

4. Fred has saved 9¢. Father is very happy. He gives Fred 9¢ more.
Fred now has 18¢. 9 and 9 are 18.

$$\begin{array}{r} 9 \\ 9 \\ \hline 18 \end{array}$$

THE TWINS

X 73

Ann says that numbers like 6 and 6 are *twins* because both numbers are the same. 1 and 1 are also twins.

These numbers are twins. Add them:

(1)

2	3	4	5	6	7	8	9
2	3	4	5	6	7	8	9
4	6	8	10	12	14	16	18

(2) Fred has 9 white chickens and 9 brown chickens. Fred has 18 chickens in all.

(3) Ed gave the squirrels 8 large nuts and 8 small nuts. He gave them 16 nuts in all.

(4) Betty has 7 dolls and Jane has 7 dolls. They both have 14 dolls. Betty has 6¢ and Jane has 6¢. They both have 12¢.

Add these numbers:

(5)

6	4	8	5	7	9	5	3
6	4	8	3	7	9	5	4
12	8	16	8	14	18	10	7

(6)

0	7	6	9	8	7	6	6
5	7	6	9	8	7	0	6
5	14	12	18	16	14	6	12

(7)

8	3	0	7	8	3	9	8
8	7	0	7	2	3	9	8
16	10	0	14	10	6	18	16

X 74

HOW ADDITION HELPS SUBTRACTION

(1) 6 and 6 are 12, so 6 from 12 is 6.

6 from 12 is 6. 6 from 12 is 6.

6 from 12 is 6. 6 from 12 is 6.

6 from 12 is 6 because 6 and 6 are 12.

$$\begin{array}{r} 6 \\ 6 \\ \hline 12 \end{array} \qquad \begin{array}{r} 12 \\ -6 \\ \hline 6 \end{array}$$

(2) 7 and 7 are 14, so 7 from 14 is 7.

7 from 14 is 7. 7 from 14 is 7.

7 from 14 is 7. 7 from 14 is 7.

7 from 14 is 7 because 7 and 7 are 14.

$$\begin{array}{r} 7 \\ 7 \\ \hline 14 \end{array} \qquad \begin{array}{r} 14 \\ -7 \\ \hline 7 \end{array}$$

(3) 8 and 8 are 16, so 8 from 16 is 8.

8 from 16 is 8. 8 from 16 is 8.

8 from 16 is 8. 8 from 16 is 8.

8 from 16 is 8 because 8 and 8 are 16.

$$\begin{array}{r} 8 \\ 8 \\ \hline 16 \end{array} \qquad \begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$$

(4) 9 and 9 are 18, so 9 from 18 is 9.

9 from 18 is 9. 9 from 18 is 9.

9 from 18 is 9. 9 from 18 is 9.

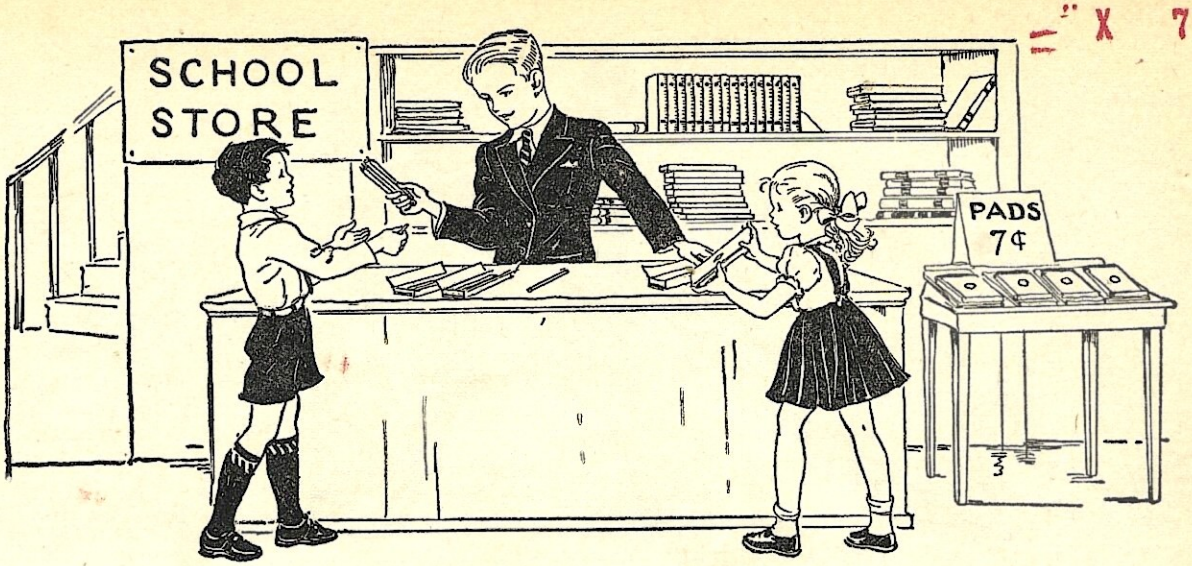
9 from 18 is 9 because 9 and 9 are 18.

$$\begin{array}{r} 9 \\ 9 \\ \hline 18 \end{array} \qquad \begin{array}{r} 18 \\ -9 \\ \hline 9 \end{array}$$

(5) 6 from 12 is 6. 8 from 16 is 8.

9 from 18 is 9. 7 from 14 is 7.

$$\begin{array}{r} 12 \\ -6 \\ \hline 6 \end{array} \qquad \begin{array}{r} 16 \\ -8 \\ \hline 8 \end{array}$$



THE SCHOOL STORE

Joe sells things in the school store.

1. Betty has 14¢. She buys a pad for 7¢. Then Betty has 7 ¢ left. 7 from 14 is 7.

2. Fred has 18¢. He buys a brown pencil for 9¢. Then he has 9 ¢ left. 9 from 18 is 9.

3. There are 12 pencils in a box. Joe sells 6 pencils to Ed. Then Joe has 6 pencils left in the box.

4. Joe has 16 story books. If he sells 8 of them today, he will have 8 books left.

5. Subtract these numbers:

14	16	12	18	16	12	14	18
−7	−8	−6	−9	−8	−6	−7	−9
7	8	6	9	8	6	7	9

K 76

THE PLAYGROUND

1. On the playground there were 5 girls and 5 boys, or 10 children in all.

5 and 5 are 10. 5 and 5 are 10.

$$\begin{array}{r} 5 \\ 5 \\ \hline 10 \end{array} \qquad \begin{array}{r} 5 \\ 6 \\ \hline 11 \end{array}$$

Then 1 more boy came. That made 5 girls and 6 boys, or 12 children in all.

5 and 6 are 12. 5 and 6 are 12.

5 and 6 are 12. 6 and 5 are 12.

$$\begin{array}{r} 5 \\ 6 \\ \hline 11 \end{array} \qquad \begin{array}{r} 6 \\ 5 \\ \hline 11 \end{array}$$

2. Yesterday on the playground there were 6 girls and 6 boys. There were 12 children in all.

6 and 6 are 12.

$$\begin{array}{r} 6 \\ 6 \\ \hline 12 \end{array} \qquad \begin{array}{r} 6 \\ 7 \\ \hline 13 \end{array}$$

Then Bob came. That made 6 girls and 7 boys, or 13 children in all.

6 and 7 are 13. 6 and 7 are 13.

6 and 7 are 13. 7 and 6 are 13.

$$\begin{array}{r} 6 \\ 7 \\ \hline 13 \end{array} \qquad \begin{array}{r} 7 \\ 6 \\ \hline 13 \end{array}$$

---

6 and 6 helps you to learn 6 and 7.

HELPING YOU TO REMEMBER

(1) 7 and 7 are 14.
7 and 7 are 14.
7 and 7 are 14.

7 and 8 are 15.
7 and 8 are 15.
7 and 8 are 15.

$\begin{array}{r} 7 \\ 7 \\ \hline 14 \end{array}$ $\begin{array}{r} 7 \\ 8 \\ \hline 15 \end{array}$

---

7 and 7 helps you to learn 7 and 8.

---

(2) 7 and 8 are 15.
7 and 8 are 15.

8 and 7 are 15.
8 and 7 are 15.

$\begin{array}{r} 7 \\ 8 \\ \hline 15 \end{array}$ $\begin{array}{r} 8 \\ 7 \\ \hline 15 \end{array}$

(3) 8 and 8 are 16.
8 and 8 are 16.
8 and 8 are 16.

8 and 9 are 17.
8 and 9 are 17.
8 and 9 are 17.

$\begin{array}{r} 8 \\ 8 \\ \hline 16 \end{array}$ $\begin{array}{r} 8 \\ 9 \\ \hline 17 \end{array}$

---

8 and 8 helps you to learn 8 and 9.

---

(4) 8 and 9 are 17.
8 and 9 are 17.

9 and 8 are 17.
9 and 8 are 17.

$\begin{array}{r} 8 \\ 9 \\ \hline 17 \end{array}$ $\begin{array}{r} 9 \\ 8 \\ \hline 17 \end{array}$

Add these numbers:

(5)

5	5	6	8	8	9	7	7
5	6	5	8	9	8	7	8
10	11	11	16	17	17	14	15

(6)

8	6	6	7	6	8	9	7
7	6	7	6	5	7	8	6
15	12	13	13	11	15	17	13

Remedial work: Rows 1–4, page 151.

X 78

WHEN THE TWINS CAN HELP

(1) You know that 5 and 5 help you to add 5 and 6.
5 and 5 are twins.
5 and 6 are *almost* twins because 6 is only 1 more than 5.
5 and 5 are 10.
5 and 6 are 11.

5 and 5 help 5 and 6

(2) 7 and 7 help 7 and 8.
7 and 7 are twins. 7 and 8 are almost twins because 8 is only 1 more than 7.
7 and 7 are 14. 7 and 8 are 15.

(3) 4 and 4 help 4 and 5. 4 and 4 are twins.
4 and 5 are almost twins for 5 is only 1 more than 4.
4 and 4 are 8. 4 and 5 are 9.
6 and 6 are 12. 6 and 7 are 13.

The twins help you to add numbers that are almost twins.

---

(4) 8 and 8 are twins. 8 and 9 are almost twins.

(5) 3 and 3 are twins. 3 and 4 are almost twins.

(6) 6 and 6 are twins. 6 and 7 are almost twins.

(7) 2 and 2 are twins. 2 and 3 are almost twins.

MORE HELP FOR YOU

(1) You know that 8 and 8 are twins. 8 and 9 are almost twins because 9 is 1 more than 8.
8 and 8 are 16. 8 and 9 are 17.

(2) 6 and 6 are twins. 6 and 7 are almost twins.
6 and 6 are 12. 6 and 7 are 13.

(3) 5 and 5 are twins. 5 and 6 are almost twins.
5 and 5 are 10. 5 and 6 are 11.

(4) 7 and 7 are twins. 7 and 8 are almost twins.
7 and 7 are 14. 7 and 8 are 15.
7 and 7 helps you to learn 7 and 8.

If you forget 7 and 8, let the 7 and 7 twins help you.

Tell which numbers are twins. Then tell which are almost twins. Add the numbers:

(5)

3	5	4	5	7	4	5	8
3	1	3	5	8	4	6	2
6	6	7	10	15	8	11	10

(6)

9	5	8	7	6	7	7	6
9	4	9	7	5	6	3	6
18	9	17	14	11	13	10	12

(7)

3	8	2	4	1	9	9	6
4	8	2	5	7	8	9	7
7	16	4	9	8	17	18	13

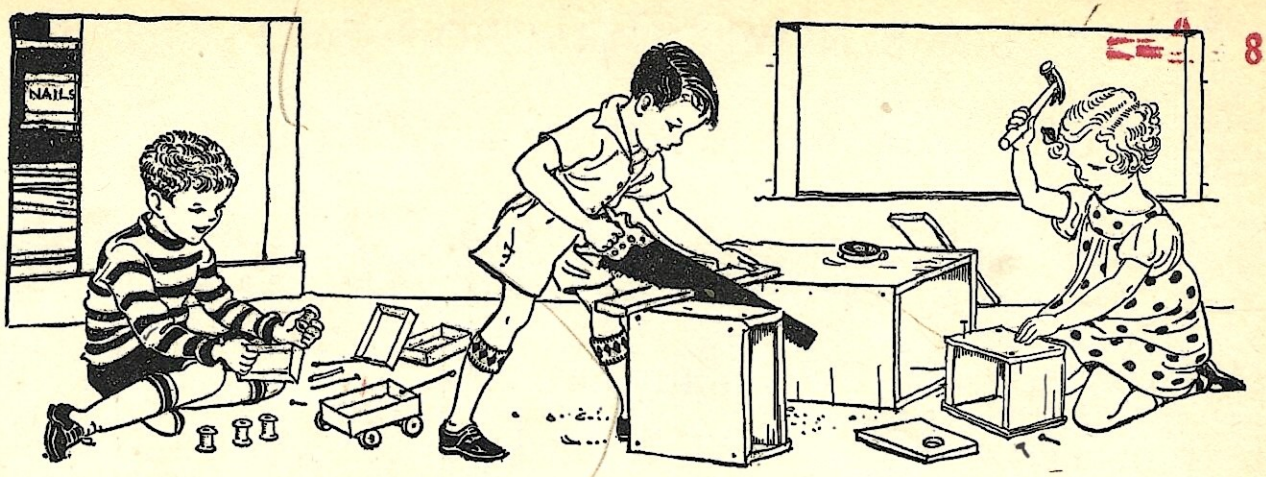
ADDING NUMBERS

(1)	7 and 8 are 15.	8 and 7 are 15.
(2)	6 and 7 are 13.	7 and 6 are 13.
(3)	5 and 6 are 11.	6 and 5 are 11.
(4)	8 and 9 are 17.	9 and 8 are 17.
(5)	7 and 6 are 13.	7 and 8 are 15.
(6)	9 and 9 are 18.	6 and 6 are 12.
(7)	6 and 5 are 11.	8 and 9 are 17.
(8)	9 and 8 are 17.	6 and 7 are 13.
(9)	7 and 7 are 14.	8 and 8 are 16.
(10)	5 and 6 are 11.	8 and 7 are 15.

Add these numbers:

(11)	5 6 11	8 7 15	6 6 12	9 8 17	7 6 13	9 9 18	6 5 11	7 7 14
(12)	9 9 18	8 9 17	6 7 13	8 8 16	5 6 11	8 7 15	6 6 12	7 8 15
(13)	9 8 17	7 7 14	8 9 17	7 6 13	6 5 11	7 8 15	6 7 13	8 8 16

Remedial work: Rows 1–4, page 151.



MAKING THINGS

1. Jane is making a box. She wants 12 nails for it. She has 6 nails. She wants 6 more nails.
6 and 6 are 12. 6 and 6 are 12.

2. Fred and Jane have made 7 boxes. They want to make 6 more boxes. Then they will have 6 boxes.
7 and 6 are 13. 6 and 7 are 13.

3. Jim is making wagons. He wants 16 spools. He has 8 spools. He needs 8 more spools.
8 and 8 are 16. 8 and 8 are 16.

4. Jim has 8 spools now. Mother will give him 7 more spools. Then he will have 15 spools.
8 and 7 are 15. 7 and 8 are 15.

5. 5 and 6 are 11. 9 and 8 are 17.
8 and 9 are 17. 6 and 5 are 11.

SOME NEW SUBTRACTION FACTS

1. Count these horses. There are 11 horses.

Cover 5 horses. How many are left? 6

5 from 11 is 6. 5 from 11 is 6.

5 from 11 is 6 because 5 and 6 are 11.

$$\begin{array}{r} 11 \\ -5 \\ \hline 6 \end{array} \qquad \begin{array}{r} 11 \\ -5 \\ \hline 6 \end{array}$$

2. Look at the 11 horses again. Cover 6 horses. How many are left? 5

6 from 11 is 5. 6 from 11 is _____.

6 from 11 is 5 because 6 and 5 are 11.

$$\begin{array}{r} 11 \\ -6 \\ \hline 5 \end{array} \qquad \begin{array}{r} 11 \\ -6 \\ \hline 5 \end{array}$$

3. 6 and 7 are 13. 6 from 13 is 7.

6 and 7 are 13. 7 from 13 is 6.

7 from 13 is 6. 6 from 13 is 7.

$$\begin{array}{r} 13 \\ -6 \\ \hline 7 \end{array} \qquad \begin{array}{r} 13 \\ -7 \\ \hline 6 \end{array}$$

4. 7 and 8 are 15. 7 from 15 is 8.

7 and 8 are 15. 8 from 15 is 7.

7 from 15 is 8. 8 from 15 is 7.

$$\begin{array}{r} 15 \\ -7 \\ \hline 8 \end{array} \qquad \begin{array}{r} 15 \\ -8 \\ \hline 7 \end{array}$$

5. 8 and 9 are 17. 8 from 17 is 9.

8 and 9 are 17. 9 from 17 is 8.

8 from 17 is 9. 9 from 17 is 8.

$$\begin{array}{r} 17 \\ -8 \\ \hline 9 \end{array} \qquad \begin{array}{r} 17 \\ -9 \\ \hline 8 \end{array}$$

SUBTRACTING NUMBERS

(1) When Bob forgets the answer to 7 from 13, he thinks, "7 and 6 are 13, so 7 from 13 is 6."

(2) When Betty forgets the answer to 8 from 15, she thinks, "8 and 7 are 15, so 8 from 15 is 7."

(3) How many are 6 from 11? If you forget, think like this, "6 and 5 are 11, so 6 from 11 is 5."

(4) How many are 8 from 17? If you forget, think like this, "8 and 9 are 17, so 8 from 17 is _____."

Subtract these numbers:

(5)	16 − 8 = 8	11 − 5 = 6	6 − 0 = 6	15 − 7 = 8	17 − 8 = 9	12 − 6 = 6	17 − 9 = 8	13 − 6 = 7
(6)	4 − 4 = 0	15 − 8 = 7	11 − 6 = 5	18 − 9 = 9	13 − 7 = 6	11 − 5 = 6	14 − 7 = 7	15 − 8 = 7
(7)	18 − 9 = 9	8 − 0 = 8	17 − 9 = 8	14 − 7 = 7	15 − 8 = 7	13 − 7 = 6	11 − 6 = 5	17 − 8 = 9
(8)	12 − 6 = 6	13 − 7 = 6	11 − 6 = 5	9 − 9 = 0	13 − 6 = 7	16 − 8 = 8	15 − 7 = 8	17 − 9 = 8

Remedial work: Rows 1–4, page 154.

MAKING PAPER FLOWERS

The girls are making paper flowers for a party.

1. Betty wants to make 11 tulips. She made 5 tulips today. How many more tulips has she to make? 6

2. Mary and Jane made 17 roses. They made 9 red roses. The others are pink roses. How many pink roses did they make? 8

3. The girls had 15 sheets of red paper. They used 8 sheets of it. How many sheets of red paper did the girls have left? 7

4. Mary's mother gave them 13 sheets of pink paper. They used 7 sheets of it. How many sheets of pink paper did they have left? 6

5. Ann made 11 flowers. She gave 6 of them away. How many flowers did she have left? 5

CAN YOU DO ALL THESE?

Find the number that is left out. In the first one write 6 because 7 and 6 are 13:

(1)	7 + 6 = 13	5 + 3 = 8	3 + 4 = 7	6 + 3 = 9	7 + 7 = 14	3 + 7 = 10	4 + 6 = 10	9 + 8 = 17
(2)	5 + 6 = 11	3 + 6 = 9	5 + 4 = 9	3 + 5 = 8	9 + 9 = 18	8 + 9 = 17	6 + 6 = 12	8 + 7 = 15
(3)	6 + 5 = 11	4 + 5 = 9	4 + 3 = 7	7 + 3 = 10	6 + 7 = 13	7 + 8 = 15	6 + 4 = 10	8 + 8 = 16

Remedial work: Rows 5–6, page 145, and rows 1–2, page 153.

Subtract these numbers:

(4)	15 − 7 = 8	18 − 9 = 9	5 − 5 = 0	7 − 3 = 4	15 − 8 = 7	9 − 5 = 4	17 − 9 = 8	13 − 7 = 6
(5)	10 − 3 = 7	11 − 6 = 5	7 − 4 = 3	8 − 3 = 5	12 − 6 = 6	0 − 0 = 0	17 − 8 = 9	11 − 5 = 6
(6)	13 − 6 = 7	11 − 5 = 6	9 − 4 = 5	6 − 0 = 6	15 − 8 = 7	9 − 6 = 3	10 − 4 = 6	16 − 8 = 8
(7)	10 − 6 = 4	14 − 7 = 7	8 − 8 = 0	9 − 3 = 6	17 − 9 = 8	8 − 5 = 3	10 − 7 = 3	13 − 7 = 6

Remedial work: Rows 4–8, page 147, and rows 1–4, page 154.

REVIEWS

Add these numbers:

(1)	4 5 9	7 8 15	3 7 10	6 6 12	2 4 6	3 6 9	6 5 11	9 8 17
(2)	2 6 8	6 7 13	5 3 8	8 9 17	2 3 5	4 3 7	8 8 16	6 4
(3)	2 5 7	7 7 14	3 4 7	5 6 11	3 3 6	5 4 9	2 8 10	6 3
(4)	4 6 10	4 4 8	8 7 15	7 3 10	9 9 18	2 7 9	7 6 13	3 5 8

Remedial work: Pages 143, 144, and 151 (rows 1–4). (32) Use Table A.

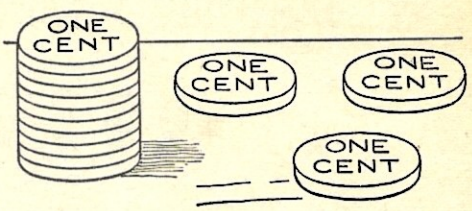
Subtract these numbers:

(5)	7 −3 4	6 −4 2	8 −3 5	9 −4 5	7 −5 2	8 −2 6	10 −2 8	10 −7 3
(6)	9 −7 2	7 −2 5	5 −3 2	8 −4 4	9 −5 4	6 −2 4	10 −6 4	10 −3 7
(7)	9 −3 6	7 −4 3	8 −5 3	9 −2 7	9 −6 3	8 −6 2	10 −4 6	10 −8 2

Remedial work: Pages 146 and 147. (24) Use Table C.

ADDING 10 TO A NUMBER

(1) These are Bob's pennies. There are 10 pennies in the pile and 3 other pennies. How many pennies has Bob? 13



10 and 3 are 13. 3 and 10 are 13.

(2) 10 and 6 are 16. 6 and 10 are 16.

(3) 10 and 8 are 18. 8 and 10 are 18.

(4) 10 and 4 are 14. 4 and 10 are 14.

(5) 10 and 9 are 19. 9 and 10 are 19.

(6) 10 and 5 are 15. 5 and 10 are 15.

(7) 10 and 7 are 17. 7 and 10 are 17.

(8) 10 and 2 are 12. 2 and 10 are 12.

1. one
2. two
3. three
4. four
5. five
6. six
7. seven
8. eight
9. nine
10. ten
11. eleven
12. twelve
13. thirteen
14. fourteen
15. fifteen
16. sixteen
17. seventeen
18. eighteen
19. nineteen
20. twenty

The word *sixteen* is made from two little words, *six* and *teen*. *Teen* means *ten*. Sixteen means *six* and *ten*. 6 and 10 are 16.

(9) The word *fourteen* means four and *ten*.

(10) The word *nineteen* means nine and *ten*.

(11) The word *seventeen* means seven and *ten*.

(12) The word *eighteen* means eight and *ten*.

(13) The word *fifteen* means five and *ten*.

ADDING 9 TO A NUMBER

1. Here are 9 plants and 3 plants:

Take 1 of the 3 plants and put it with the 9 plants. That makes 10 plants and 2 plants like this:

You see that 9 and 3 make 10 and 2. You know that 10 and 2 are 12. So 9 and 3 are 12.

9 and 3 are 12. 9 and 3 are 12.

2. Here are 9 plants and 5 plants:

Take 1 of the 5 plants and put it with the 9 plants. That makes 10 plants and 4 plants, like this:

You see that 9 and 5 make 10 and 4, or 14.

So 9 and 5 are 14. 9 and 5 are 14.

3. Put 9 pencils together on the table. Then put 7 more pencils on the table. Show that 9 and 7 make 10 and 6.

10 and 6 are 16, so 9 and 7 are 16.

9 and 7 are 16. 9 and 7 are 16.

ADDING 9 TO A NUMBER

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(1) 9 and 6 make 10 and 5, or 15.
So 9 and 6 are 15. 9 and 6 are 15.

$$\begin{array}{r} 9 \\ 6 \\ \hline 15 \end{array}$$

To add 9 and 6, take 1 from 6, which gives 5.
Then add 10, which gives 15.

(2) 9 and 4 make 10 and 3, or 13.
So 9 and 4 are 13. 9 and 4 are 13.

$$\begin{array}{r} 9 \\ 4 \\ \hline 13 \end{array}$$

To add 9 and 4, take 1 from 4, which gives 3.
Then add 10, which gives 13.

(3) 9 and 8 make 10 and 7, or 17.
So 9 and 8 are 17. 9 and 8 are 17.

$$\begin{array}{r} 9 \\ 8 \\ \hline 17 \end{array}$$

To add 9 and 8, take 1 from 8, which gives 10.
Then add 10, which gives 17.

(4) 9 and 5 make 10 and 4, or 14.
So 9 and 5 are 14. 9 and 5 are 14.

$$\begin{array}{r} 9 \\ 5 \\ \hline 14 \end{array}$$

To add 9 and 5, take 1 from 5, which gives 10.
Then add 10, which gives 14.

(5) 9 and 3 are 12. 9 and 7 are 16.

$$\begin{array}{r} 9 \\ 7 \\ \hline \end{array}$$

9 and 6 are 15. 9 and 8 are 17.
9 and 4 are 13. 9 and 2 are 11.

MORE ABOUT 9's

(1) 5 and 9 make 4 and 10, or 14.
5 and 9 are 14. 5 and 9 are 14.

$\begin{array}{r} 5 \\ 9 \\ \hline 14 \end{array}$

To add 5 and 9, take 1 from 5 and add 10.

---

(2) 7 and 9 make 6 and 10, or 16.
7 and 9 are 16. 7 and 9 are 16.

$\begin{array}{r} 7 \\ 9 \\ \hline 16 \end{array}$

(3) 4 and 9 make 3 and 10, or 13.
4 and 9 are 13. 4 and 9 are 13.

$\begin{array}{r} 4 \\ 9 \\ \hline 13 \end{array}$

(4) 8 and 9 make 7 and 10, or 17.
8 and 9 are 17. 8 and 9 are 17.

$\begin{array}{r} 8 \\ 9 \\ \hline 17 \end{array}$

(5) 6 and 9 make 5 and 10, or 15.
6 and 9 are 15. 6 and 9 are 15.

$\begin{array}{r} 6 \\ 9 \\ \hline 15 \end{array}$

Add these numbers:

(6)

9	9	9	9	9	9	9	9
5	7	4	6	3	9	2	8
14	16	13	15	12	18	11	17

(7)

3	6	4	9	8	2	7	5
9	9	9	9	9	9	9	9
12	15	13	18	17	11	16	14

THE 9's FAMILY

These facts make the 9's family. Each fact has 9 in it.

Add these numbers:

(1)

9	9	9	9	9	9	9	9
4	7	2	9	6	8	5	3
13	16	11	18	15	17	14	12

(2)

6	3	7	4	5	9	2	8
9	9	9	9	9	9	9	9
15	12	16	13	14	18	11	17

The 9's family is a big family. You know how to get the answers to these facts.

(3) A fast way to add 9 and 7 is like this:
Look at 7 and think, "6." Then say, "16."

(4) A fast way to add 9 and 8 is like this:
Look at 8 and think, "7." Then say, "17."

(5) Fred adds 5 and 9 the fast way like this:
He looks at 5 and says, "4." Then he says, "14."

(6) Bob has another way to add 5 and 9. He turns the numbers around and gets 9 and 5. He remembers that 9 and 5 are 14, so 5 and 9 are 14.

If you forget, try Fred's way or Bob's way.

ADDING NUMBERS

Add these numbers:

(1)	5	9	7	9	3	9	9	9
	9	2	9	4	9	6	7	2
	14	11	16	13	12	15	16	11
(2)	6	4	9	7	9	6	2	9
	9	9	3	9	5	9	9	4
	15	13	12	16	14	15	11	13
(3)	9	3	5	2	9	4	9	9
	6	9	9	9	5	9	7	3
	15	12	14	11	14	13	16	12

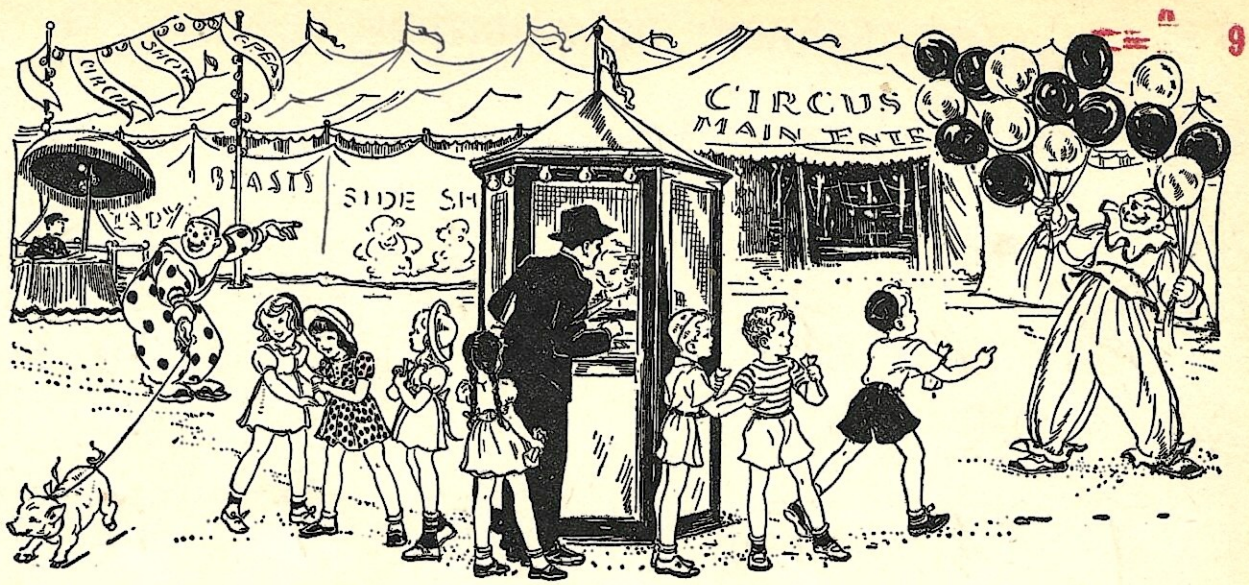
Remedial work: Rows 5–8, page 151.

REVIEW

Write the number that is left out. In the first one write 6 because 9 and 6 are 15:

(4)	9	6	5	7	9	5	9	7
	6	6	9	6	2	6	3	9
	15	12	14	13	13	11	12	16
(5)	3	7	8	9	7	6	9	6
	9	8	9	2	7	9	5	7
	12	15	17	11	14	15	14	13
(6)	9	9	6	9	4	8	8	2
	9	7	5	8	9	7	8	9
	18	16	11	17	13	15	16	11

Remedial work: Rows 1–4, page 153.



AT THE CIRCUS

1. Father took 4 girls and 3 boys to the circus. He took 7 children in all.

2. Before they went into the circus they saw a clown with balloons to sell. He had 9 red balloons and 6 blue balloons. He had 15 balloons in all.

3. In the circus they saw ponies running around the rings. There were 4 black ponies and 9 white ponies. There were 13 ponies in all.

4. The children saw 9 funny clowns on one elephant. They saw 7 funny clowns on another elephant. They saw 16 funny clowns in all on the two elephants.

5. They saw 9 big monkeys and 5 little monkeys riding on ponies. They saw 14 monkeys in all.

REVIEW OF ADDITION

Add these numbers:

(1)	9 3 12	5 9 14	8 8 16	2 9 11	7 6 13	6 5 11	7 8 15	9 9 18
(2)	5 6 11	9 7 16	3 9 12	8 7 15	6 9 15	9 8 17	6 6 12	4 9 13
(3)	7 7 14	9 2 11	7 9 16	9 5 14	8 9 17	6 7 13	9 4 13	9 6 15

Remedial work: Rows 1–8, page 151.

TEST IN ADDITION

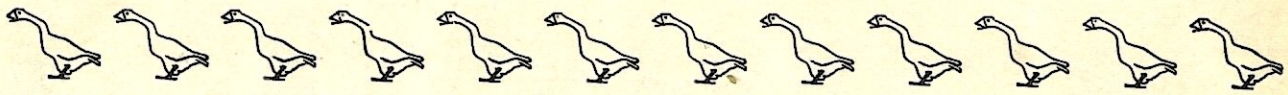
Add these numbers:

(4)	4 9 13	5 6 11	7 8 15	6 6 12	9 5 14	7 9 16	9 3 12	6 9 15
(5)	2 9 11	9 6 15	7 7 14	9 2 11	6 7 13	6 9 15	9 7 16	5 9 14
(6)	4 9 13	8 9 17	3 9 12	9 6 15	5 9 14	8 8 16	6 5 11	9 8 17
(7)	8 7 15	2 9 11	7 6 13	7 9 16	9 9 18	3 9 12	9 4 13	7 9 16

Remedial work: Rows 1–8, page 151.

MORE ABOUT SUBTRACTION

(1) Count these geese. There are 12 geese.



Cover 9 geese. How many are left? 3

9 from 12 is 3. 9 from 12 is 3.

$$\begin{array}{r} 12 \\ -9 \\ \hline 3 \end{array} \qquad \begin{array}{r} 12 \\ -3 \\ \hline 9 \end{array}$$

Look at the 12 geese again. Cover 3 geese.
How many geese are left? 9

3 from 12 is 9. 3 from 12 is 9.

(2) 9 and 5 are 14. 9 from 14 is 5.

5 and 9 are 14. 5 from 14 is 9.

5 from 14 is 9. 9 from 14 is 5.

9 from 14 is 5 because 9 and 5 are 14.

$$\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array} \qquad \begin{array}{r} 14 \\ -5 \\ \hline 9 \end{array}$$

(3) Draw 16 stars. Color 9 stars red.
If you take 9 stars from 16 stars, how many stars are left? 7

If you take 7 stars from 16 stars, how many stars are left? 9

9 from 16 is 7. 7 from 16 is 9.

7 from 16 is 9. 9 from 16 is 7.

$$\begin{array}{r} 16 \\ -9 \\ \hline 7 \end{array} \qquad \begin{array}{r} 16 \\ -7 \\ \hline 9 \end{array}$$

(4) 3 from 12 is 9 because 3 and 9 are 12.

7 from 16 is 9 because 7 and 9 are 16.

SOME NEW SUBTRACTION FACTS

(1) How many trees do you see? 15

Color 9 trees green. If you take 9 trees from 15 trees, how many are left? 6

If you take 6 trees from 15 trees, how many trees are left? 9

9 from 15 is 6. 6 from 15 is 9.

$$\begin{array}{r} 15 \\ -9 \\ \hline 6 \end{array} \qquad \begin{array}{r} 15 \\ -6 \\ \hline 9 \end{array}$$

(2) Fred forgets 9 from 15. Then he thinks like this, "9 and 6 are 15, so 9 from 15 is 6."

(3) 9 and 4 are 13. 9 from 13 is 4.
4 and 9 are 13. 4 from 13 is 9.
4 from 13 is 9. 9 from 13 is 4.
9 from 13 is 4 because 9 and 4 are 13.

$$\begin{array}{r} 13 \\ -9 \\ \hline 4 \end{array} \qquad \begin{array}{r} 13 \\ -4 \\ \hline 9 \end{array}$$

(4) 9 and 2 are 11. 9 from 11 is 2.
2 and 9 are 11. 2 from 11 is 9.
2 from 11 is 9. 9 from 11 is 2.
9 from 11 is 2 because 9 and 2 are 11.

$$\begin{array}{r} 11 \\ -9 \\ \hline 2 \end{array} \qquad \begin{array}{r} 11 \\ -2 \\ \hline 9 \end{array}$$

(5) Ann forgets 9 from 17. Then she thinks like this, "9 and 8 are 17, so 9 from 17 is 8."

SUBTRACTING NUMBERS

(1) 9 and 3 are 12. 9 and 5 are 14.

(2) 6 and 9 are 15. 2 and 9 are 11.

(3) 5 and 9 are 14. 9 and 4 are 13.

(4) 9 and 7 are 16. 9 and 8 are 17.

(5) 4 and 9 are 13. 3 and 9 are 12.

(6) 8 and 9 are 17. 9 and 6 are 15.

(7) 9 and 2 are 11. 7 and 9 are 16.

Subtract these numbers:

(8)

14	13	11	16	15	13	16	12
−5	−9	−2	−7	−9	−4	−9	−3
9	4	9	9	6	9	7	9

(9)

12	13	14	17	12	15	11	14
−9	−4	−9	−8	−3	−6	−9	−5
3	9	5	9	9	9	2	9

(10)

15	12	11	16	13	16	11	15
−6	−3	−9	−7	−9	−9	−2	−9
9	9	2	9	4	7	9	6

(11)

14	17	13	15	11	12	14	16
−9	−9	−4	−9	−2	−9	−5	−9
5	8	9	6	9	3	9	7

Remedial work: Rows 5–8, page 154.

MORE AND LESS

(1) Bob has 8 rabbits. Fred has 6 rabbits.
Bob has 2 rabbits *more* than Fred.
Fred has 2 rabbits *less* than Bob.
8 is 2 *more* than 6. 6 is 2 *less* than 8.

(2) Betty has 5 dolls. Ann has 3 dolls.
Betty has 2 dolls *more* than Ann.
Ann has 2 dolls *less* than Betty.
5 is 2 *more* than 3. 3 is 2 *less* than 5.

(3) Fred has 9 dimes. Bob has 7 dimes.
Fred has 2 dimes *more* than Bob.
Bob has 2 dimes *less* than Fred.
9 is 2 *more* than 7. 7 is 2 *less* than 9.

(4) Mary has 5 cents. Ann has 7 cents.
Mary has 2 cents less than Ann.
Ann has 2 cents more than Mary.
5 is 2 less than 7. 7 is 2 more than 5.

(5) Bob has 6 cookies. Betty has 3 cookies.
Betty has 3 cookies less than Bob.
Bob has 3 cookies more than Betty.
3 is 3 less than 6. 6 is 3 more than 3.

(6) 9 is 1 more than 8. 7 is 1 less than 8.

HOW MANY MORE OR LESS?

Write the numbers that are left out:

(1) 6 is 1 more than 5. 8 is 4 more than 4.

(2) 8 is 1 more than 7. 5 is 3 more than 2.

(3) 3 is 2 more than 1. 4 is 2 more than 2.

(4) 7 is 2 more than 5. 7 is 1 more than 6.

(5) 9 is 1 more than 8. 6 is 1 less than 7.

(6) 3 is 1 less than 4. 2 is 1 less than 3.

(7) 8 is 2 less than 10. 1 is 3 less than 4.

(8) 4 is 2 less than 6. 1 is 1 less than 2.

---

(9) 7 is 3 more than 4 because 4 and 3 are 7.

(10) 6 is 2 more than 4 because 4 and 2 are 6.

(11) 9 is 7 more than 2 because 2 and 7 are 9.

(12) 8 is 2 more than 6 because 6 and 2 are 8.

(13) 6 is 3 less than 9 because 6 and 3 are 9.

(14) 3 is 5 less than 8 because 3 and 5 are 8.

(15) 5 is 3 less than 8 because 5 and 10 are 8.

(16) 9 is 1 less than 10 because 9 and 1 are 10.

(17) 7 is 3 less than 10 because 7 and 3 are 10.

HOW TO HELP YOURSELF

(1) 7 is how many more than 3? If you forget, think "3 and what are 7?" You know that 3 and 4 are 7. So 7 is 4 more than 3.

(2) 9 is 5 more than 4. 10 is 4 more than 6.

(3) 9 is 6 more than 3. 10 is 7 more than 3.

(4) 5 is 4 more than 1. 10 is 6 more than 4.

(5) 3 is 2 more than 1. 10 is 8 more than 2.

(6) 12 is 3 more than 9. 11 is 5 more than 6.

(7) 13 is 6 more than 7. 15 is 7 more than 8.

---

(8) 5 is how many less than 9? If you forget, think "5 and what are 9?" You know that 5 and 4 are 9, so 5 is 4 less than 9.

(9) 7 is 7 less than 14. 8 is 8 less than 16.

(10) 9 is 8 less than 17. 9 is 5 less than 14.

(11) 9 is 4 less than 13. 8 is 9 less than 17.

(12) 7 is 8 less than 15. 9 is 7 less than 16.

(13) 5 is 6 less than 11. 9 is 2 less than 11.

(14) 9 is 6 less than 15. 7 is 9 less than 16.

(15) 8 is 2 less than 10. 6 is 4 less than 10.

Remedial work: Rows 5–11, page 155.

REVIEW OF SUBTRACTION

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Subtract these numbers:

(1)	18 − 9 = 9	15 − 8 = 7	13 − 7 = 6	12 − 3 = 9	11 − 6 = 5	13 − 9 = 4	14 − 7 = 7	15 − 9 = 6
(2)	11 − 2 = 9	16 − 7 = 9	12 − 6 = 6	15 − 7 = 8	14 − 5 = 9	15 − 6 = 9	17 − 8 = 9	16 − 9 = 7
(3)	11 − 5 = 6	13 − 4 = 9	17 − 9 = 8	14 − 9 = 5	16 − 8 = 8	11 − 9 = 2	13 − 6 = 7	12 − 9 = 3

Remedial work: Rows 1–8, page 154.

TEST IN SUBTRACTION

Subtract these numbers:

(4)	11 − 6 = 5	13 − 4 = 9	11 − 9 = 2	15 − 6 = 9	13 − 7 = 6	17 − 9 = 8	12 − 9 = 3	16 − 8 = 8
(5)	14 − 5 = 9	14 − 7 = 7	15 − 9 = 6	11 − 5 = 6	14 − 9 = 5	12 − 3 = 9	13 − 9 = 4	16 − 9 = 7
(6)	13 − 4 = 9	11 − 2 = 9	16 − 7 = 9	15 − 8 = 7	17 − 8 = 9	12 − 6 = 6	14 − 7 = 7	13 − 9 = 4
(7)	13 − 6 = 7	14 − 5 = 9	18 − 9 = 9	12 − 3 = 9	16 − 7 = 9	14 − 9 = 5	15 − 7 = 8	11 − 9 = 2

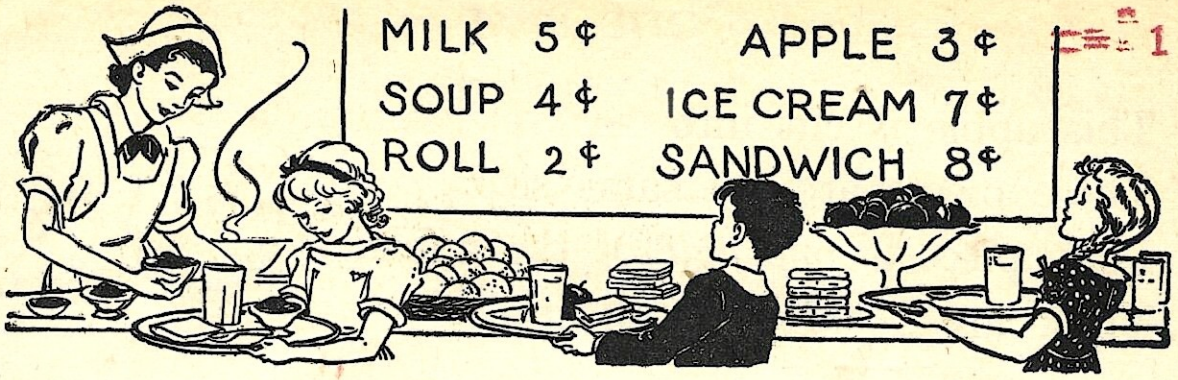
Remedial work: Rows 1–8, page 154.

ADDING THREE NUMBERS

Add. First add up. Then check by adding down:

(1)	2 8 1 11	6 2 7 15	7 7 1 15	8 2 5 15	3 6 3 12	8 7 1 16	6 4 1 11	8 1 8 17
(2)	7 3 3 13	6 5 1 12	8 0 7 15	6 3 4 13	9 1 1 11	6 5 1 12	9 0 9 18	6 1 8 15
(3)	5 1 5 11	2 3 6 11	8 6 1 15	3 7 2 12	6 0 6 12	4 5 4 13	3 4 2 9	2 4 5 11
(4)	4 4 2 10	7 6 1 14	9 0 2 11	7 2 4 13	5 1 3 9	8 2 6 16	2 7 2 11	9 1 8 18
(5)	1 7 8 16	7 3 5 15	6 4 2 12	7 3 4	3 3 6 12	2 4 1 7	1 4 6 11	6 0 5 11
(6)	1 1 7 9	7 2 5 14	3 0 9 12	6 3 2 11	9 8 1 18	8 0 8 16	6 3 3 12	7 8 1 16

Remedial work: Rows 3–4, page 148.



HOW MUCH DOES EACH CHILD PAY?

Each child buys 3 things. Add to find how much each child pays:

(1)

Ann		*Fred*		*Betty*	
ice cream	7¢	milk	5¢	milk	5¢
bread	2¢	apple	3¢	orange	4¢
milk	5¢	bread	2¢	roll	2¢
	14¢		10¢		11¢

Add to find how much other children pay:

(2)

7¢	4¢	5¢	3¢	7¢	7¢
3¢	2¢	1¢	7¢	3¢	2¢
4¢	3¢	5¢	2¢	5¢	4¢
14¢	9¢	11¢	12¢	15¢	13¢

(3)

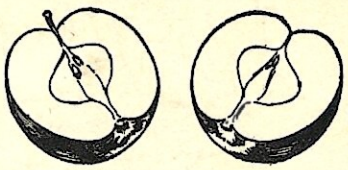
4¢	2¢	2¢	8¢	7¢	4¢
5¢	4¢	8¢	2¢	3¢	1¢
4¢	5¢	1¢	5¢	3¢	5¢
13¢	11¢	11¢	15¢	13¢	10¢

(4) Milk costs 5 ¢. An apple costs 3 ¢.

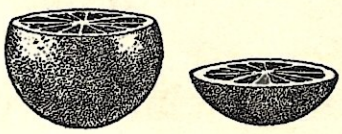
A roll costs 2 ¢. Ice cream costs 7 ¢.

ONE HALF

This apple is cut into 2 pieces.
These pieces are the same size.
Each piece is *one half* of the apple.
There are 2 *halves* in an apple.

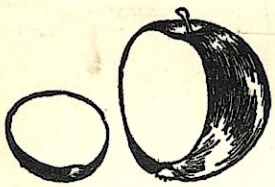


This orange is cut into 2 pieces.
These pieces are not the same size.
These pieces are not halves.
Halves must be the same size.



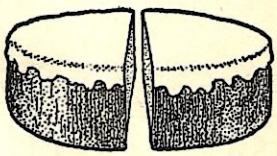
You write *one half* like this: $\frac{1}{2}$

Write *yes* under each picture if the pieces are halves. Write *no* if they are not halves:

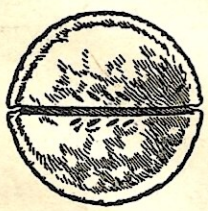


no

yes

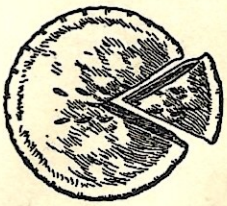


yes



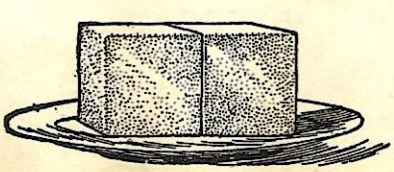
yes

yes



no

no



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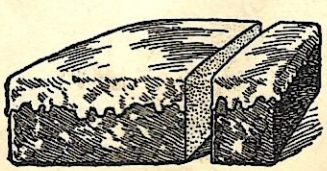
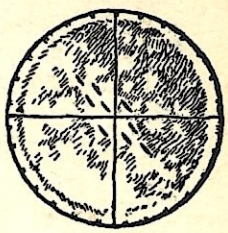


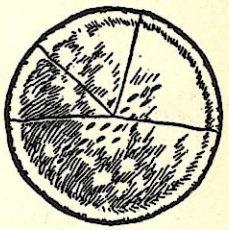
no

ONE FOURTH

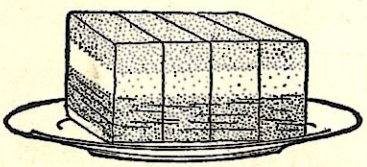
This pie is cut into 4 pieces.
These pieces are the same size.
Each piece is *one fourth* of the pie.
There are 4 *fourths* in a pie.
You write *one fourth* like this: $\frac{1}{4}$



This pie is cut into 4 pieces.
Are these pieces the same size? no
These pieces are not fourths.
Fourths must be the same size.

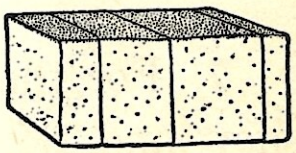


Write *yes* under each picture if the pieces are fourths.
Write *no* if they are not:



yes

yes



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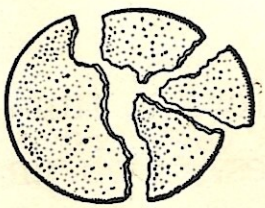

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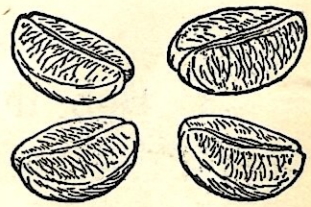
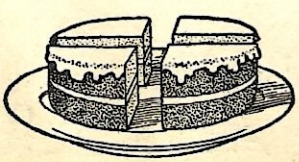


yes



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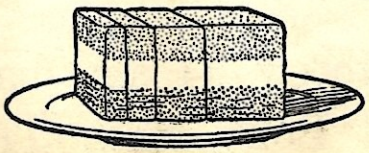

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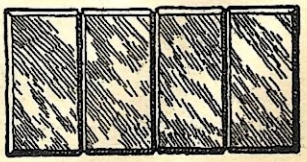
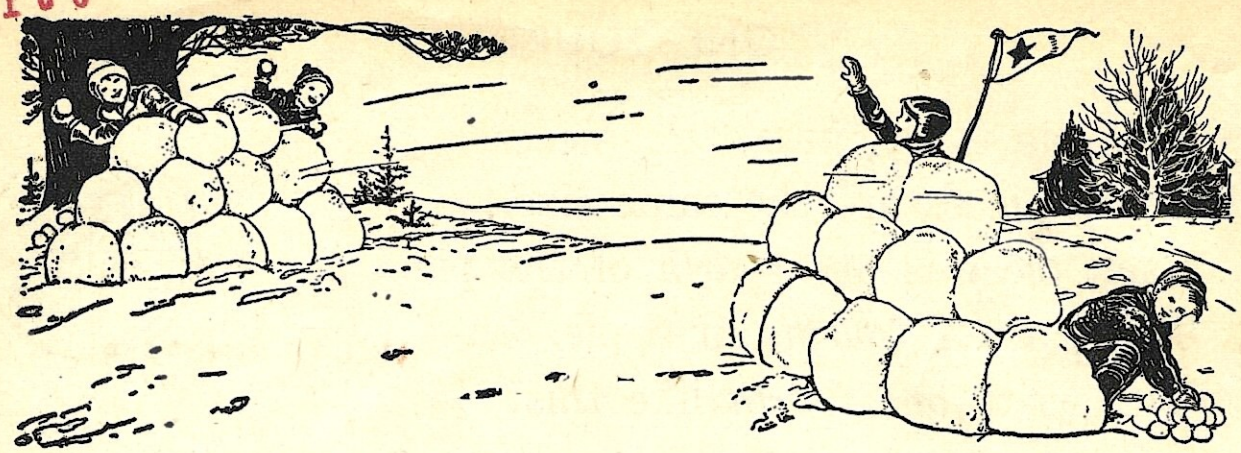


yes

106



THROWING SNOWBALLS

The boys made two forts from big balls of snow.

1. For one fort Bob rolled 7 big balls of snow and Fred rolled 4 big balls. The two boys rolled 11 big balls of snow for their fort.

7 and 4 are 11. 4 and 7 are 11.

$$\begin{array}{r} 7 \\ 4 \\ \hline 11 \end{array}$$

2. For the other fort Jim rolled 8 big balls of snow and Ed rolled 4 big balls. Jim and Ed had 12 balls of snow for their fort.

8 and 4 are 12. 4 and 8 are 12.

$$\begin{array}{r} 8 \\ 4 \\ \hline 12 \end{array}$$

3. Bob hit Jim's fort 8 times with snowballs and Fred hit it 3 times. Bob and Fred hit Jim's fort 11 times in all.

8 and 3 are 11. 3 and 8 are 11.

$$\begin{array}{r} 8 \\ 3 \\ \hline 11 \end{array}$$

4. Jim and Ed threw 14 snowballs at Bob's fort. 9 snowballs hit Bob's fort. The other 5 snowballs did not hit it.

$$\begin{array}{r} 14 \\ -9 \\ \hline 5 \end{array}$$

MORE HELP IN ADDITION

(1) 8 and 2 are 10. 8 and 3 are 11.
8 and 3 are 11. 3 and 8 are 11.

(2) 7 and 3 are 10. 7 and 4 are 11.
7 and 4 are 11. 4 and 7 are 11.

(3) 8 and 3 are 11. 8 and 4 are 12.
8 and 4 are 12. 4 and 8 are 12.

(4) If you forget 8 and 3, let 8 and 2 help you.
8 and 2 are 10. So 8 and 3 are 11.

(5) If you forget 8 and 4, let 8 and 3 help you.
8 and 3 are 11. So 8 and 4 are 12.

(6) If you forget 7 and 4, let 7 and 3 help you.
7 and 3 are 10. So 7 and 4 are 11.

Add these numbers:

(7)

7	7	3	4	8	8	8	4
3	4	8	7	4	2	3	8
10	11	11	11	12	10	11	12

(8)

7	8	4	3	3	7	8	4
4	3	8	7	8	4	4	7
11	11	12	10	11	11	12	11

REVIEW OF ADDITION

Add these numbers:

(1)	2 9 11	9 4 13	7 6 12	8 9 17	9 3 12	4 7 11	8 7 15	5 9 14
(2)	5 6 11	7 8 15	8 3 11	6 9 15	4 7 11	8 8 16	9 5 14	4 8 12
(3)	7 9 16	3 8 11	7 7 14	9 2 11	6 5 11	8 4 12	3 9 12	9 7 16
(4)	4 9 12	6 7 13	7 4 11	9 8 17	4 8 12	9 6 15	3 8 11	9 9 18
(5)	7 4 11	9 6 15	4 9 13	6 7 13	9 9 18	3 8 11	9 8 17	4 8 12
(6)	9 3 12	7 6 13	4 7 11	2 9 11	8 9 17	5 9 14	9 4 13	8 7 15
(7)	8 3 11	4 7 11	9 5 14	5 6 11	6 9 15	7 8 15	4 8 12	8 8 16
(8)	7 7 14	6 5 11	3 9 12	7 9 16	9 2 11	9 7 16	3 8 11	8 4 12

Remedial work: Rows 1–8, page 151.

CAN YOU FIND THE NUMBER?

(1) 8 and 3 are 11. 7 and 4 are 11.

(2) 4 and 8 are 12. 3 and 7 are 10.

(3) 4 and 7 are 11. 8 and 4 are 12.

(4) 3 and 8 are 11. 9 and 5 are 14.

Write the number that is left out:

(5)

6	9	7	5	2	9	5	8
7	3	8	9	9	4	6	3
13	12	15	14	11	13	11	11

(6)

8	9	7	7	3	4	8	9
7	7	4	6	9	9	4	5
15	16	11	13	12	13	12	14

(7)

9	6	3	6	7	8	4	3
2	9	8	5	9	9	7	8
11	15	11	11	16	17	11	11

(8)

4	4	9	8	4	8	9	7
8	7	8	3	8	4	7	4
12	11	17	11	12	12	16	11

Remedial work: Rows 1–5, page 153.

DOZEN AND POUND

1. Jim bought a dozen eggs for his mother. How many eggs make a dozen? 12

2. Jim bought a half dozen rolls. That makes 6 rolls.

12 things = 1 dozen

6 things = $\frac{1}{2}$ dozen

3. Draw lines under each of the things that you can buy by the dozen:

oranges sugar cookies milk pencils

---

4. Miss Ball is weighing the children at school. Jim weighs 48 pounds. How many pounds do you weigh? 59/60

5. Betty bought a pound of sugar and used half of it to make candy. She used 1/2 pound of sugar for the candy.

6. Draw lines under each of the things that you can buy by the pound:

nuts candy pencils chicken flowers

THE JUMPING FROGS

113

1. You see 11 frogs. Color 7 frogs green.

If 7 frogs jump away from 11 frogs, how many frogs will be left? 4

If 4 frogs jump away from 11 frogs, how many frogs will be left? 7

7 from 11 is 4. 4 from 11 is 7.

$$\begin{array}{r} 11 \\ -7 \\ \hline 4 \end{array} \qquad \begin{array}{r} 11 \\ -4 \\ \hline 7 \end{array}$$

2. Here are 12 frogs. Color 8 frogs green.

If 8 frogs jump away from 12 frogs, how many frogs will be left? 4

If 4 frogs jump away from 12 frogs, how many frogs will be left? 8

8 from 12 is 4. 4 from 12 is 8.

$$\begin{array}{r} 12 \\ -8 \\ \hline 4 \end{array} \qquad \begin{array}{r} 12 \\ -4 \\ \hline 8 \end{array}$$

3. Take 11 pencils. Give 8 pencils to a boy. How many pencils do you have left? 3

Take the 11 pencils again. Then give 3 pencils to a girl. How many pencils do you have left? 8

8 from 11 is 3. 3 from 11 is 8.

$$\begin{array}{r} 11 \\ -8 \\ \hline 3 \end{array} \qquad \begin{array}{r} 11 \\ -3 \\ \hline 8 \end{array}$$

SUBTRACTING NUMBERS

Subtract these numbers:

(1)	11 − 2 = 9	12 − 4 = 8	11 − 8 = 3	12 − 9 = 3	11 − 3 = 8	12 − 8 = 4	11 − 4 = 7	16 − 7 = 9
(2)	14 − 9 = 5	11 − 7 = 4	11 − 3 = 8	12 − 4 = 8	13 − 9 = 4	11 − 7 = 4	12 − 8 = 4	11 − 8 = 3
(3)	13 − 4 = 9	11 − 3 = 8	12 − 4 = 8	15 − 9 = 6	11 − 4 = 7	14 − 5 = 9	12 − 8 = 4	11 − 9 = 2
(4)	11 − 4 = 7	12 − 3 = 9	11 − 8 = 3	12 − 4 = 8	16 − 9 = 7	11 − 3 = 8	11 − 7 = 4	15 − 6 = 9

Remedial work: Rows 5–8, page 154.

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(5) 4 is 7 less than 11 because 4 and 7 are 11.

(6) 8 is 3 less than 11 because 8 and 3 are 11.

(7) 3 is 8 less than 11 because 3 and 8 are 11.

(8) 12 is 4 more than 8 because 8 and 4 are 12.

(9) 11 is 3 more than 8 because 8 and 3 are 11.

(10) 12 is 8 more than 4 because 4 and 8 are 12.

(11) 11 is 4 more than 7 because 7 and 4 are 11.

REVIEW OF SUBTRACTION

115

Subtract these numbers:

(1)	13 − 7 = 6	16 − 9 = 7	11 − 3 = 8	17 − 8 = 9	11 − 4 = 7	14 − 5 = 9	12 − 4 = 8	11 − 6 = 5
(2)	14 − 9 = 5	13 − 4 = 9	11 − 5 = 6	11 − 7 = 4	12 − 9 = 3	11 − 8 = 3	15 − 8 = 7	12 − 8 = 4
(3)	11 − 9 = 2	15 − 7 = 8	12 − 4 = 8	15 − 9 = 6	11 − 3 = 8	13 − 6 = 7	12 − 8 = 4	11 − 4 = 7
(4)	17 − 9 = 8	11 − 8 = 3	13 − 9 = 4	12 − 3 = 9	16 − 7 = 9	11 − 7 = 4	11 − 2 = 9	15 − 6 = 9
(5)	13 − 4 = 9	12 − 8 = 4	11 − 7 = 4	14 − 9 = 5	11 − 8 = 3	15 − 8 = 7	11 − 5 = 6	12 − 9 = 3
(6)	16 − 7 = 9	11 − 8 = 3	11 − 2 = 9	13 − 9 = 4	15 − 6 = 9	11 − 7 = 4	17 − 9 = 8	12 − 3 = 9
(7)	11 − 3 = 8	14 − 5 = 9	12 − 4 = 8	13 − 7 = 6	17 − 8 = 9	11 − 6 = 5	11 − 4 = 7	16 − 9 = 7
(8)	15 − 7 = 8	13 − 6 = 7	11 − 3 = 8	15 − 9 = 6	12 − 8 = 4	11 − 9 = 2	11 − 4 = 7	12 − 4 = 8

116

BUYING THINGS

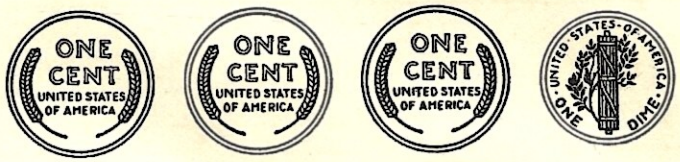
1. Bob buys a ball for 11¢. He gives the man in the store a dime and a nickel. A dime and a nickel make 15 ¢. The man gives Bob these pennies in change:

15¢
-11¢
4¢

Does Bob get the right change? Yes

2. Ann buys a little doll for 12¢. She gives the man a quarter, or 25 ¢. Ann gets back this change:

25¢
-12¢
13¢

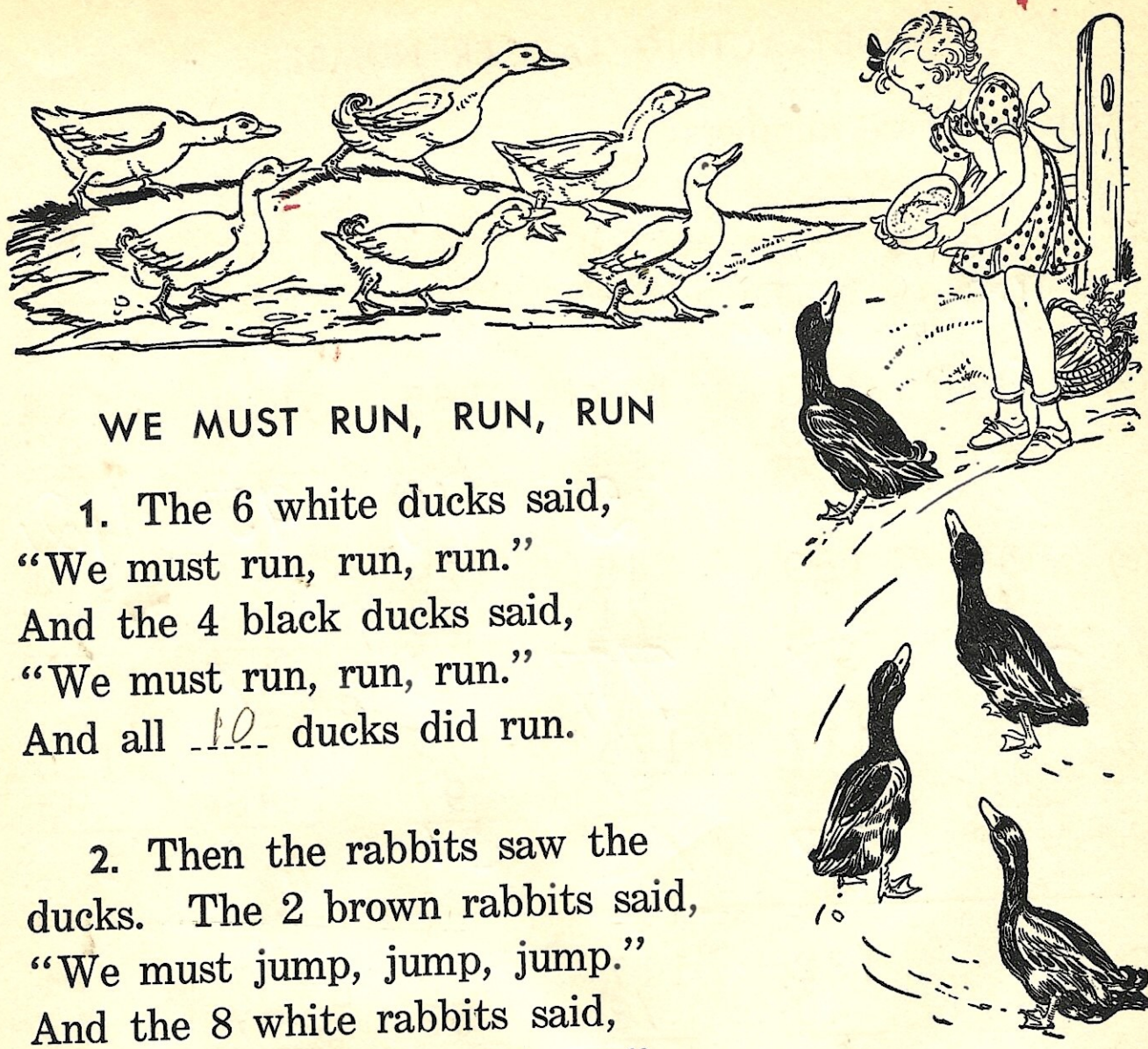


Does Ann get the right change? Yes

3. Betty buys a balloon for 13¢. She gives a quarter to the man in the store. Betty gets back this change:

25¢
-13¢
12¢

Does Betty get the right change? Yes



WE MUST RUN, RUN, RUN

1. The 6 white ducks said,
"We must run, run, run."
And the 4 black ducks said,
"We must run, run, run."
And all 10 ducks did run.

2. Then the rabbits saw the ducks. The 2 brown rabbits said,
"We must jump, jump, jump."
And the 8 white rabbits said,
"We must jump, jump, jump."
And all 10 rabbits did jump.

3. Then the birds saw the rabbits and the ducks.
The 7 bluebirds said, "We must fly, fly, fly."
And the 3 red birds said, "We must fly, fly, fly."
And all 10 birds did fly.

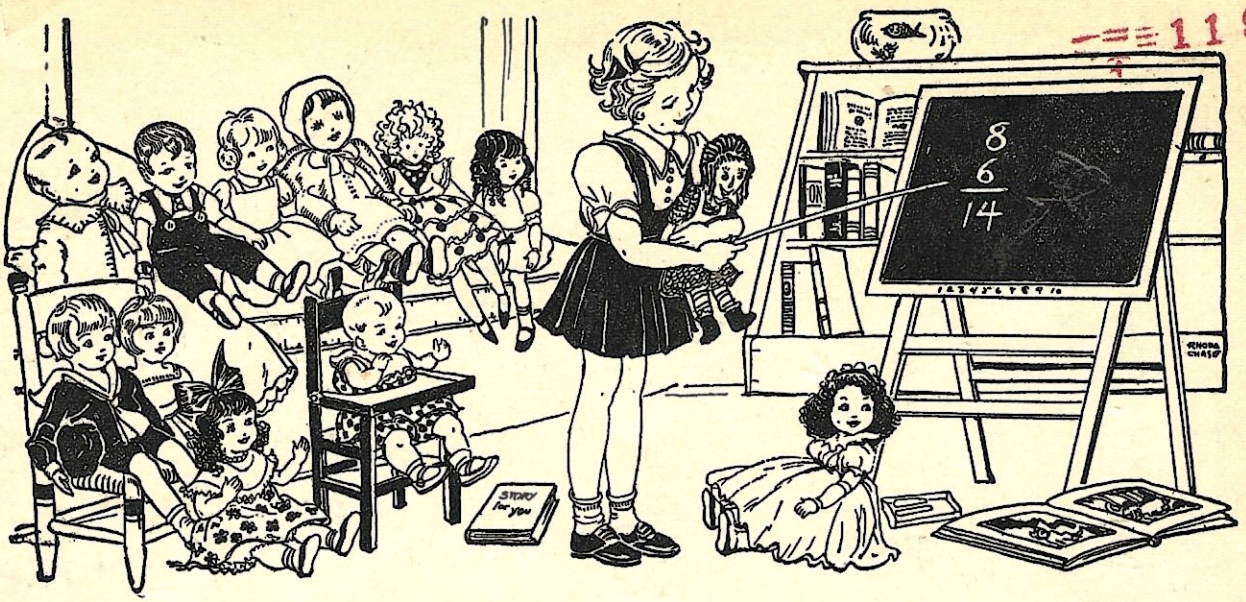
4. Then all the 10 birds, all the 10 ducks, and all the 10 rabbits said to Jane, "We must eat, eat, eat."
And all 30 of them did eat.

SUBTRACTING LARGER NUMBERS

Subtract these numbers:

(1)	119 − 30 = 89	128 − 64 = 64	137 − 71 = 66	116 − 55 = 61	125 − 42 = 83	156 − 80 = 76
(2)	135 − 61 = 74	113 − 83 = 30	127 − 35 = 92	165 − 75 = 90	119 − 24 = 95	134 − 92 = 42
(3)	166 − 91 = 75	159 − 61 = 98	148 − 71 = 77	129 − 89 = 40	157 − 70 = 87	114 − 84 = 30
(4)	118 − 45 = 73	117 − 64 = 53	176 − 84 = 92	128 − 97 = 31	109 − 48 = 61	115 − 93 = 22
(5)	128 − 83 = 45	138 − 40 = 98	117 − 73 = 44	149 − 53 = 96	177 − 97 = 80	114 − 41 = 73
(6)	155 − 90 = 65	169 − 82 = 87	126 − 43 = 83	119 − 87 = 32	128 − 66 = 62	143 − 92 = 51
(7)	129 − 46 = 83	148 − 98 = 50	115 − 44 = 71	144 − 70 = 74	114 − 33 = 81	160 − 70 = 90
(8)	119 − 75 = 44	128 − 82 = 46	117 − 32 = 85	187 − 96 = 91	156 − 62 = 94	116 − 76 = 40

Remedial work: Rows 5–6, page 150.



THE DOLLS GO TO SCHOOL

1. Jane plays school with her dolls. She has 7 old dolls and 5 new dolls. Jane has 12 dolls in her school.

7 and 5 are 12. 5 and 7 are 12.

$$\begin{array}{r} 7 \\ 5 \\ \hline 12 \end{array} \qquad \begin{array}{r} 5 \\ 7 \\ \hline 12 \end{array}$$

2. Jane has 8 picture books and 5 story books for the dolls' school. Jane has _____ books in all.

8 and 5 are 13. 5 and 8 are 13.

5 and 8 are 13. 8 and 5 are 13.

$$\begin{array}{r} 8 \\ 5 \\ \hline 13 \end{array} \qquad \begin{array}{r} 5 \\ 8 \\ \hline 13 \end{array}$$

3. Jane tells the dolls how to add.

Jane says, "8 and 6 are 14."

Then the dolls say, "8 and 6 are 14."

Then Jane says, "6 and 8 are 14."

And the dolls say, "6 and 8 are 14."

$$\begin{array}{r} 8 \\ 6 \\ \hline 14 \end{array} \qquad \begin{array}{r} 6 \\ 8 \\ \hline 14 \end{array}$$

ADDING NUMBERS

Add these numbers:

(1)	3 8 11	8 5 13	5 7 12	7 4 11	8 6 14	4 8 12	9 9 18	5 8 11
(2)	5 7 12	8 3 11	6 8 14	8 5 13	4 7 11	8 6 14	7 5 12	8 4 12
(3)	4 7 11	5 8 13	7 7 14	8 6 14	7 5 12	6 8 14	8 5 13	3 8 11
(4)	8 4 12	5 7 12	6 8 14	7 4 11	5 8 13	8 3 11	7 5 12	4 8 12

Remedial work: Rows 1–4, page 152.

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(5) Bob says that 7 and 5 helps him to do 8 and 5. 7 and 5 are 12, so 8 and 5 are 13.

(6) Betty says that 8 and 5 helps her to do 8 and 6. 8 and 5 are 13, so 8 and 6 are 14.

(7) Betty forgets 8 and 9. Bob says, "Let the twins help you." Betty tries the 9 and 9 twins. She says, "9 and 9 are 18, so 8 and 9 are 17."

(8) Ed forgets 9 and 6. He lets the 9's family help him. He says, "9 and 6 make 10 and 5, or 6."

ADDING THREE NUMBERS

Add. First add up. Then check by adding down:

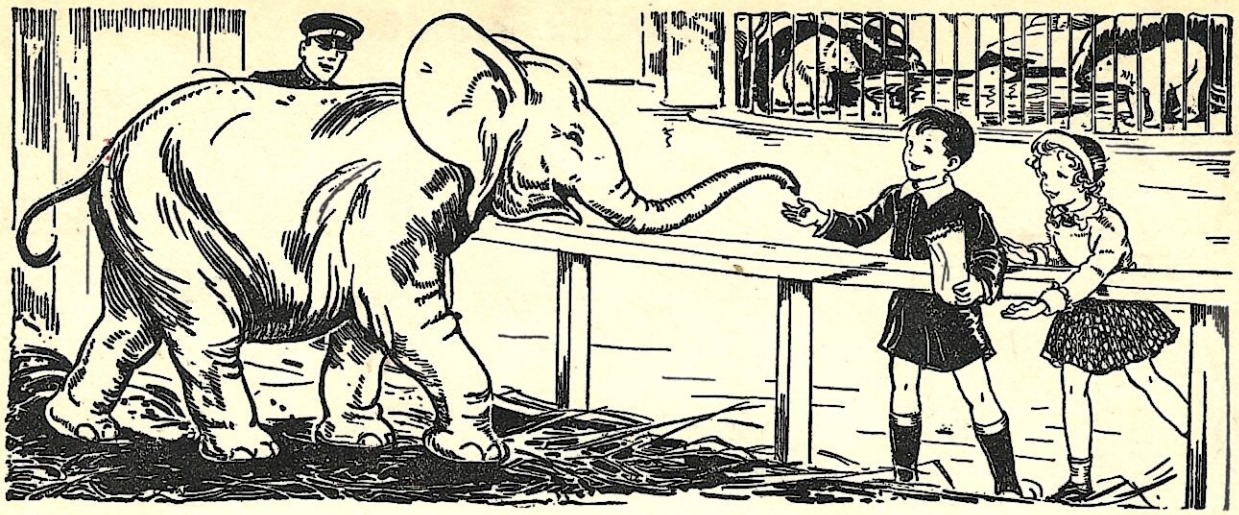
(1)	2 5 4 11	3 7 1 11	7 1 5 13	4 4 3 11	6 2 3 11	4 7 1 12	3 1 8 12	8 0 4 12
(2)	5 1 7 13	6 2 5 13	4 6 2 12	8 2 7 17	4 4 5 13	9 1 6 16	7 3 2 12	3 4 4 11
(3)	7 6 1 14	8 1 4 13	5 3 3 11	7 3 1 11	5 4 4 13	2 6 3 11	5 4 1 10	3 4 5 12
(4)	4 0 7 11	6 2 4 12	5 2 6 13	9 4 1 14	7 1 6 14	6 3 5 14	7 0 9 16	8 2 1 11
(5)	6 1 5 12	2 2 2 6	3 2 6 11	8 2 2 12	5 8 1 14	5 2 4 11	6 2 6 14	8 0 6 14
(6)	4 0 1 5	3 2 4 9	4 1 6 11	3 5 3 11	4 0 9 13	7 1 3 11	3 5 1 9	4 4 4 12

Remedial work: Rows 1–6, page 148, and rows 5–7, page 152.

ADDING THREE NUMBERS

Add. First add up. Then check by adding down:

(1)	9 1 3 13	8 2 4 14	7 2 2 11	7 3 6 16	2 2 6 10	9 1 5 15	4 5 1 10	3 1 8 12
(2)	6 4 3 13	3 6 3 12	7 2 4 13	1 6 1 8	8 0 5 13	4 8 1 13	5 2 3 10	6 8 1 15
(3)	2 1 8 11	5 5 3 13	3 3 2 8	4 6 3 13	2 5 2 9	6 4 3 13	9 0 4 13	6 3 3 12
(4)	4 5 4 13	5 4 4 13	3 4 3 10	7 1 2 10	8 2 3 13	4 3 6 13	5 5 2 12	2 4 5 11
(5)	7 1 3 11	1 3 3 7	5 5 4 14	7 4 1 12	6 2 2 10	8 8 1 17	4 3 5 12	6 1 3 10
(6)	6 3 6 15	3 5 4 12	2 4 4 10	3 8 1 12	5 3 5 13	6 4 4 14	5 0 7 12	4 2 4 10



ELEPHANTS, BEARS, AND MONKEYS

1. Jane and Fred went to see the animals. Jane gave the little elephant 5 peanuts. Fred gave him 8 peanuts. Both children gave him 13 peanuts.

2. Then the children saw the bears. They saw 7 white bears and 4 brown bears. The children saw 11 bears in all.

3. The white bears like to eat fish. The man gave them 9 large fish and 5 small fish. The white bears had 14 fish to eat.

4. The children saw 9 little monkeys playing in a tree. They saw 2 big monkeys running around a chair. The children saw 11 monkeys in all.

5. Jane gave the monkeys 9 peanuts. Fred gave them 7 peanuts. The children gave the monkeys 16 peanuts in all.

ADDING LARGER NUMBERS

Add these numbers:

(1)	72	83	52	96	53	83	30
	52	53	83	63	61	62	84
	124	136	135	159	114	145	114
(2)	83	54	72	60	71	26	71
	64	73	66	85	77	91	55
	147	127	138	145	148	117	126
(3)	44	60	55	53	80	72	33
	71	86	93	86	70	57	93
	115	146	148	139	150	129	126
(4)	98	52	81	64	82	94	40
	81	70	36	55	54	73	89
	179	122	117	119	136	167	129
(5)	62	64	87	61	85	52	95
	71	92	52	61	50	77	42
	133	156	139	122	135	129	137
(6)	86	85	75	90	51	97	52
	82	64	41	28	82	81	72
	108	149	116	118	133	178	124
(7)	43	67	73	72	91	51	25
	94	80	55	87	34	81	93
	137	147	128	159	125	132	118
(8)	61	87	74	91	92	89	84
	83	92	94	98	55	40	65
	144	179	168	189	147	129	149

ADDING THREE NUMBERS

127

Add. First add up. Then check by adding down:

(1)	6 2 7 16	8 1 3 12	1 2 7 10	5 0 9 14	7 1 4 12	8 1 1 10	4 5 2 11	3 4 5 12
(2)	8 4 1 13	5 4 5 14	6 1 1 8	5 2 6 13	6 0 9 15	5 2 2 9	6 7 1 14	5 1 4 10
(3)	1 8 1 10	9 0 5 14	3 3 4 10	3 2 5 10	7 2 6 15	8 1 5 14	5 3 1 9	9 6 1 16
(4)	6 3 4 13	4 2 7 13	6 2 1 9	9 3 1 13	4 3 2 9	5 6 1 12	2 7 2 11	8 3 1 12
(5)	4 4 5	5 4 2	8 0 3	7 2 7	6 2 3	7 1 7	5 1 2	8 1 6
(6)	5 2 7	8 5 1	2 3 6	7 2 3	9 1 2	5 2 1	7 1 8	3 2 3

Remedial work: Page 148 and rows 5–7, page 152.

128

NUMBER STORIES

1. Bob made a boat 1 foot long. 1 foot is the same as 12 inches. Bob's boat is 12 inches long.

2. Fred's boat is 9 inches long. Bob's boat is 3 inches longer than Fred's boat.

3. Jim has a large boat 21 inches long. Is Jim's boat as much as 2 feet long? no

4. Bob weighs 47 pounds. Mary weighs 45 pounds. Mary weighs 2 pounds less than Bob.

5. Betty is 40 inches tall. Jim is 3 inches taller than Betty. Jim is 43 inches tall.

6. Betty says that she has 17¢. Mary has 9¢. Betty has 8¢ more than Mary.

7. Jim buys a dozen cookies for his mother. There are 12 cookies in a dozen.

8. Ann's little kittens are one week old. The kittens are 7 days old.

9. Mary says she is 7 years old today. Her father gave her 7 dimes. Count the dimes by 10's to see how many cents they make:

10¢ 20¢ 30¢ 40¢ 50¢ 60¢ 70¢

MORE SUBTRACTION FACTS

1. Here are 12 flowers. They are Ann's flowers.

Draw a line around 7 flowers. If Ann gives 7 flowers to Bob, how many will be left? 5

If you have 12 flowers and give 5 flowers to Jane, how many will be left? 7

7 from 12 is 5. 5 from 12 is 7.

$$\begin{array}{r} 12 \\ -7 \\ \hline 5 \end{array} \qquad \begin{array}{r} 12 \\ -5 \\ \hline 7 \end{array}$$

2. Count these deer. There are 13 deer.

Draw a line around 5 deer. If 5 deer run away from the 13 deer, how many will be left? 8

If 8 deer run away from the 13 deer, how many deer will be left? 5

5 from 13 is 8. 8 from 13 is 5.

8 from 13 is 5 because 8 and 5 are 13.

$$\begin{array}{r} 13 \\ -5 \\ \hline 8 \end{array} \qquad \begin{array}{r} 13 \\ -8 \\ \hline 5 \end{array}$$

3. How many are 8 from 14? Think like this, "8 and 6 are 14, so 8 from 14 is 6."

How many are 6 from 14? Think like this: "6 and 8 are 14. 6 from 14 is 8."

8 from 14 is 6. 6 from 14 is 8.

$$\begin{array}{r} 14 \\ -8 \\ \hline 6 \end{array} \qquad \begin{array}{r} 14 \\ -6 \\ \hline 8 \end{array}$$

SUBTRACTING NUMBERS

(1) 7 from 12 is 5. 8 from 14 is 6.

(2) 5 from 13 is 8. 5 from 12 is 7.

(3) 6 from 14 is 8. 8 from 13 is 4.

(4) 8 is 6 less than 14 because 8 and 6 are 14.

(5) 8 is 5 less than 13 because 8 and 5 are 13.

(6) 12 is 5 more than 7 because 7 and 5 are 12.

(7) 13 is ____ more than 5 because 5 and ____ are 13.

Subtract these numbers:

(8)

14	12	11	13	11	14	15	12
−6	−7	−3	−5	−7	−8	−6	−5
8	5	8	8	4	6	9	7

(9)

13	11	12	14	11	12	14	12
−8	−4	−4	−8	−8	−7	−6	−8
5	7	8	6	3	5	8	4

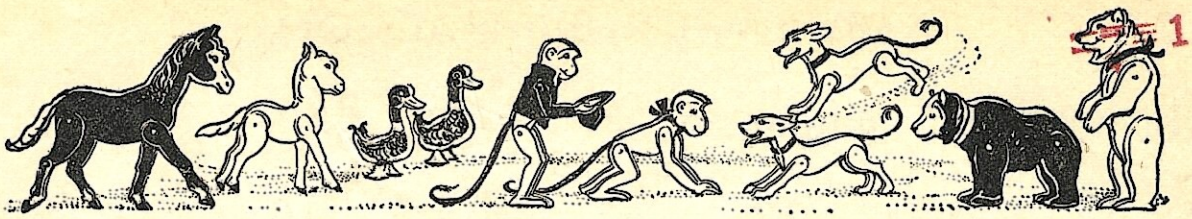
(10)

11	12	12	13	12	13	11	13
−8	−8	−5	−9	−4	−8	−7	−5
3	4	7	4	8	5	4	8

(11)

13	11	12	14	13	11	12	14
−5	−3	−7	−6	−8	−4	−5	−8
8	8	5	8	5			6

Remedial work: Rows 1–4, page 155.



THE TOY ANIMALS HAVE A PARTY

1. One day the toy animals had a party. There were 2 ponies, 2 ducks, 2 monkeys, 2 dogs, and 2 bears. There were 10 toy animals at the party.

2. The ducks and the monkeys said, "We want the ponies to run a race." And so the ponies ran. The big pony ran 11 feet. The little pony ran 6 feet. The big pony ran 5 feet more than the little pony.

3. Then the dogs said, "We can jump very high." And they did. One dog jumped 4 feet high. The other dog jumped 6 feet high. One dog jumped 2 feet higher than the other dog.

4. Then the bears said, "We will dance." And they did. White Bear went round and round 9 times. Brown Bear went round and round 13 times. Brown Bear went round 4 times more than White Bear.

5. Then all the animals said, "It is time to eat. We want to eat the cakes." And so they did. They ate 5 big brown cakes, 4 little white cakes, and 5 nut cakes. The animals ate 14 cakes in all.

REVIEW OF SUBTRACTION

Subtract these numbers:

(1)	17 − 8 = 9	11 − 9 = 2	12 − 4 = 8	11 − 5 = 6	14 − 5 = 9	16 − 8 = 8	12 − 7 = 5	11 − 3 = 8
(2)	13 − 5 = 8	14 − 6 = 8	12 − 6 = 6	14 − 8 = 6	11 − 7 = 4	13 − 5 = 8	13 − 9 = 4	14 − 6 = 8
(3)	11 − 4 = 7	12 − 7 = 5	14 − 8 = 6	12 − 9 = 3	13 − 6 = 7	12 − 5 = 7	13 − 8 = 5	18 − 9 = 9
(4)	14 − 7 = 7	11 − 8 = 3	15 − 6 = 9	13 − 8 = 5	16 − 9 = 7	12 − 8 = 4	15 − 7 = 8	12 − 5 = 7
(5)	12 − 4 = 8	15 − 8 = 7	16 − 7 = 9	14 − 7 = 7	12 − 5 = 7	11 − 8 = 3	13 − 4 = 9	17 − 9 = 8
(6)	11 − 2 = 9	14 − 8 = 6	15 − 9 = 6	13 − 5 = 8	12 − 3 = 9	12 − 7 = 5	16 − 8 = 8	12 − 8 = 4
(7)	12 − 7 = 5	11 − 6 = 5	14 − 6 = 8	11 − 3 = 8	13 − 8 = 5	14 − 8 = 6	11 − 7 = 4	12 − 6 = 6
(8)	11 − 4 = 7	13 − 5 = 8	14 − 9 = 5	12 − 5 = 7	18 − 9 = 9	13 − 7 = 6	13 − 8 = 5	14 − 6 = 8

Remedial work: Page 154 and rows 1–4, page 155.

(32) Use Table A.

COUNTING

1. Count by 5's to 100:

5 10 15 20 25 30 35
40 45 50 55 60 65 70
75 80 85 90 95 100

2. Count by 2's from 10 to 50:

10 12 14 16 18 20 22
24 26 28 30 32 34 36
38 40 42 44 46 48 50

3. Write the numbers that are left out:

56 57 58 59 60 61 62 63
89 90 91 92 93 94 95 96
44 45 46 47 48 49 50 51

4. Write the numbers that come before and after each number. The first one shows how:

76 77 78 — 63 64 65 — 90 91 92
38 39 40 — 98 99 100 — 44 45 46
79 80 81 — 55 56 57 — 22 23 24

SUBTRACTING LARGER NUMBERS

Subtract these numbers:

(1)	137 − 42 = 95	128 − 57 = 71	150 − 60 = 90	115 − 84 = 31	142 − 50 = 92	136 − 84 = 52
(2)	144 − 84 = 60	119 − 42 = 77	138 − 52 = 86	137 − 70 = 67	148 − 64 = 84	118 − 98 = 20
(3)	127 − 74 = 53	113 − 23 = 90	156 − 95 = 61	124 − 30 = 94	139 − 63 = 76	159 − 86 = 73
(4)	116 − 32 = 84	141 − 90 = 51	135 − 55 = 80	162 − 72 = 90	123 − 40 = 83	149 − 84 = 65
(5)	138 − 96 = 42	124 − 71 = 53	118 − 61 = 57	137 − 83 = 54	124 − 72 = 52	176 − 83 = 93
(6)	125 − 90 = 35	131 − 81 = 50	112 − 71 = 41	165 − 93 = 72	143 − 82 = 61	187 − 97 = 90
(7)	146 − 60 = 86	117 − 55 = 62	128 − 50 = 78	154 − 73 = 81	129 − 87 = 42	168 − 85 = 83
(8)	175 − 92 = 83	123 − 71 =	148 − 63 = 85	127 − 66 = 61	139 − 50 = 89	149 − 75 = 4

Remedial work: Rows 5–8, page 150.

REVIEW

1. A quarter will buy as much as 5 nickels.
Two dimes and a nickel will buy as much as 25¢.
A half dollar will buy as much as 5 dimes.

2. Fred buys a toy bear for 15¢. He gives a quarter to the man in the store. Fred gets back 10¢ in change.

3. Mary forgets the answer to 7 and 9. She lets the 9's family help her. She says, "7 and 9 make 10 and 6, or 16. So 7 and 9 are ____."

4. Ann forgets how to add 3 and 8. She turns the numbers around and gets 8 and 3, which make 11.
So 3 and 8 are 11.

5. Ed buys a black pencil for 3¢, a red pencil for 5¢, and a pad for 4¢. He pays 8¢ for all of them.

6. Tell which twins will help you if you forget:
The 7 8 and 7 8 twins help you to add 7 and 8.
The 4 5 and 4 5 twins help you to add 4 and 5.
The 6 7 and 6 7 twins help you to add 7 and 6.

7. The number XII on the clock means 12.

V means 5.	IV means 4.	VI means 6.
X means 10.	IX means 9.	III means 3.
II means 2.	XI means 11.	VII means 7.

WHAT NUMBER IS LEFT OUT?

Write the numbers that are left out:

(1)	9	8	6	8	6	9	5	7
	5	3	9	5	6	8	9	6
	14	11	15	13	12	17	12	13
(2)	5	6	8	9	4	7	2	5
	6	8	7	4	8	5	9	8
	11	14	15	13	12	12	11	13
(3)	7	3	8	4	7	8	7	6
	5	9	5	7	9	7	7	8
	12	12	13	11	16	14	14	14

Write the numbers that are left out:

(4)	9	8	6	9	7	5	9	7
	2	6	7	3	8	7	9	5
	11	14	13	12	15	12	18	12
(5)	7	8	5	6	8	5	8	3
	4	8	9	5	4	8	9	8
	11	16	14	11	12	13	17	11
(6)	9	8	4	8	9	5	6	5
	6	5	9	6	7	7	8	8
	15	13	13	14	16	12	14	13

TESTS. ADDITION AND SUBTRACTION

Add these numbers:

(1)	34 94 128	30 88 118	82 84 166	50 60 110	92 57 149	51 84 135	93 76 169
(2)	74 85 159	71 46 117	82 65 147	40 96 136	65 63 128	89 30 119	98 81 179
(3)	74 50 124	63 94 157	71 71 142	73 63 136	92 26 118	47 81 128	93 92 185

Remedial work: Rows 1–8, page 149. (21) Use Table D.

Subtract these numbers:

(4)	93 62 31	55 43 12	67 37 30	118 64 54	144 91 53	158 96 62	114 70 44
(5)	29 27 02	88 85 03	97 82 15	146 85 61	139 79 60	123 31 92	139 52 87
(6)	79 43 36	46 40 06	79 54 25	158 81 77	127 46 81	160 80 80	116 82 34
(7)	84 72 12	85 31 54	75 35 40	116 94 22	179 95 84	168 72 96	137 40 97

Remedial work: Rows 1–8, page 150. (28) Use Table B.

TESTS. ADDING THREE NUMBERS

Add. First add up. Then check by adding down:

(1)	3	4	3	5	2	3	1	4
	1	2	6	1	4	3	4	4
	5	3	1	1	2	3	5	1
	9	9	10	7	8	9	10	9
(2)	2	8	6	9	5	6	6	1
	1	2	1	2	5	0	3	6
	7	6	4	1	4	9	2	3
	10	16	11	12	14	15	11	10
(3)	6	9	7	2	8	4	2	4
	4	0	3	5	1	3	6	0
	2	4	4	1	7	4	2	8
	12	13	14	8	16	11	10	12

Remedial work: Rows 1–6, page 148. (24) Use Table C.

(4)	5	5	6	8	7	5	9	6
	3	4	2	5	1	3	1	2
	6	3	5	1	6	4	4	6
	14	12	13	14	14	12	14	14
(5)	8	4	7	3	7	4	8	5
	1	4	3	1	2	6	4	0
	4	4	6	7	5	2	1	8
	13	12	16	11	14	12	13	13
(6)	8	7	6	5	7	7	6	4
	1	2	4	7	0	1	1	1
	8	2	4	1	4	5	8	7
	17	18	14	13	11	13	15	12

Remedial work: Rows 5–7, page 152. (24) Use Table C.

REMEDIAL SHEET 1

ADDITION FACTS—GROUPS I AND II

Add. Write the answers on folded paper:

(1)	2 1 3	1 5 6	5 5 10	1 3 4	1 7 8	5 1 6	1 2 3	3 1 4
(2)	7 1 8	1 2 3	3 1 4	1 7 8	5 1 6	1 3 4	5 5 10	1 5 6
(3)	6 1 7	9 1 10	1 6 7	1 1 2	8 1 9	1 9 10	4 1 5	1 6 7
(4)	1 8 9	1 4 5	8 1 9	1 9 10	6 1 7	1 8 9	9 1 10	1 4 5
(5)	2 3 5	7 2 9	2 2 4	5 2 7	2 7 9	3 2 5	7 2 9	2 5 7
(6)	2 2 4	3 3 6	2 5 7	3 2 5	2 7 9	5 2 7	3 3 6	2 3 5
(7)	2 8 10	4 2 6	2 6 8	8 2 10	6 2 8	4 4 8	2 4 6	8 2 10
(8)	6 2 8	2 6 8	2 4 6	4 4 8	2 8 10	4 2 6	2 8 10	2 6 8

NOTE TO TEACHER. Groups I and II contain 33 addition facts with repetitions. These addition facts are developed on pages 8–11 and 18–22. For suggestions for using the Remedial Sheets, see page 158 The pupils should not tear out the Remedial Sheets.

REMEDIAL SHEET 2

A

ADDITION FACTS—GROUP III

Add. Write the answers on folded paper:

(1)	0 7 7	9 0 9	2 5 7	0 0 0	4 4 8	2 0 2	2 4 6	8 0 8
(2)	6 0 6	1 9 10	5 0 5	3 3 6	0 6 6	2 8 10	4 0 4	0 9 9
(3)	0 4 4	6 2 8	0 3 3	0 8 8	1 5 6	7 0 7	2 7 9	0 5 5
(4)	5 4 9	4 3 7	3 4 7	4 6 10	4 5 9	6 4 10	4 3 7	4 6 10
(5)	3 4 7	4 6 10	4 5 9	6 4 10	4 3 7	4 5 9	6 4 10	5 4 9
(6)	6 3 9	3 7 10	3 5 8	7 3 10	6 3 9	5 3 8	3 7 10	3 6 9
(7)	7 3 10	3 6 9	5 3 8	3 5 8	6 3 9	3 7 10	5 3 8	3 5 8
(8)	3 4 7	0 7 7	5 3 8	4 5 9	0 0 0	6 3 9	3 7 10	6 4 10

NOTE TO TEACHER. Group III, as given above, contains 12 new addition facts with repetitions and most of the addition facts involving zeros. These facts are developed on pages 34, 35, and 38–42.

Do not tear out this sheet.

REMEDIAL SHEET 3

A

PREPARATION FOR SUBTRACTION

On folded paper write the numbers that are left out:

(1)	$\frac{3}{*\,1\,4}$	$\frac{1}{*\,4\,5}$	$\frac{5}{*\,5\,10}$	$\frac{1}{*\,7\,8}$	$\frac{6}{*\,1\,7}$	$\frac{1}{*\,4\,5}$	$\frac{1}{*\,1\,2}$	$\frac{8}{*\,1\,9}$
(2)	$\frac{1}{*\,2\,3}$	$\frac{7}{*\,1\,8}$	$\frac{1}{*\,5\,10}$	$\frac{1}{*\,0\,7}$	$\frac{4}{*\,1\,5}$	$\frac{1}{*\,2\,9}$	$\frac{1}{*\,3\,4}$	$\frac{9}{*\,1\,10}$
(3)	$\frac{5}{*\,2\,7}$	$\frac{2}{*\,7\,9}$	$\frac{2}{*\,2\,4}$	$\frac{3}{*\,3\,6}$	$\frac{2}{*\,3\,5}$	$\frac{6}{*\,2\,8}$	$\frac{2}{*\,4\,6}$	$\frac{8}{*\,2\,10}$
(4)	$\frac{3}{*\,2\,5}$	$\frac{7}{*\,2\,9}$	$\frac{4}{*\,2\,6}$	$\frac{2}{*\,5\,7}$	$\frac{4}{*\,4\,8}$	$\frac{2}{*\,0\,8}$	$\frac{2}{*\,8\,10}$	$\frac{6}{*\,2\,8}$
(5)	$\frac{5}{*\,4\,9}$	$\frac{3}{*\,4\,7}$	$\frac{4}{*\,5\,9}$	$\frac{6}{*\,4\,10}$	$\frac{4}{*\,3\,7}$	$\frac{3}{*\,4\,7}$	$\frac{4}{*\,6\,10}$	$\frac{5}{*\,4\,9}$
(6)	$\frac{3}{*\,5\,8}$	$\frac{6}{*\,3\,9}$	$\frac{3}{*\,0\,9}$	$\frac{7}{*\,3\,10}$	$\frac{6}{*\,3\,9}$	$\frac{5}{*\,3\,8}$	$\frac{3}{*\,7\,10}$	$\frac{3}{*\,5\,8}$

NOTE TO TEACHER. In using folded paper in ex. 1 on this page, the edge of the paper is placed under the sums instead of under the stars. The pupil then writes on the paper the proper numbers to replace the stars. Rows 1–2 include the facts of Group I; rows 3–4 include Group II; and rows 5–6 include Group III.

Do not tear out this sheet.

REMEDIAL SHEET 4

SUBTRACTION FACTS—GROUPS I AND II

Subtract. Write the answers on folded paper:

(1)	3 − 2 = 1	6 − 1 = 5	10 − 5 = 5	8 − 1 = 7	3 − 1 = 2	8 − 7 = 1	6 − 5 = 1	8 − 1 = 7
(2)	4 − 3 = 1	8 − 7 = 1	4 − 1 = 3	6 − 5 = 1	6 − 1 = 5	3 − 2 = 1	4 − 3 = 1	10 − 5 = 5
(3)	5 − 4 = 1	9 − 1 = 8	2 − 1 = 1	10 − 9 = 1	7 − 1 = 6	9 − 8 = 1	5 − 1 = 4	7 − 6 = 1
(4)	7 − 1 = 6	10 − 1 = 9	9 − 1 = 8	5 − 1 = 4	9 − 8 = 1	7 − 6 = 1	10 − 9 = 1	5 − 4 = 1
(5)	5 − 3 = 2	4 − 2 = 2	9 − 7 = 2	7 − 2 = 5	6 − 3 = 3	5 − 2 = 3	7 − 5 = 2	9 − 2 = 7
(6)	5 − 2 = 3	7 − 5 = 2	4 − 2 = 2	9 − 7 = 2	7 − 2 = 5	9 − 2 = 7	5 − 3 = 2	7 − 2 = 5
(7)	8 − 2 = 6	8 − 4 = 4	10 − 2 = 8	6 − 4 = 2	8 − 6 = 2	8 − 2 = 6	10 − 8 = 2	6 − 2 = 4
(8)	10 − 2 = 8	6 − 2 = 4	8 − 6 = 2	8 − 4 = 4	10 − 8 = 2	6 − 2 = 4	6 − 4 = 2	8 − 2 = 6

NOTE TO TEACHER. Groups I and II contain 33 subtraction facts with repetitions. These 33 facts are developed on pages 13–17 and 26–31.

REMEDIAL SHEET 5

SUBTRACTION FACTS—GROUP III

Subtract. Write the answers on folded paper:

(1)	6 − 0 = 6	9 − 9 = 0	5 − 3 = 2	8 − 0 = 8	8 − 6 = 2	9 − 0 = 9	8 − 4 = 4	7 − 7 = 0
(2)	6 − 2 = 4	7 − 0 = 7	7 − 5 = 2	0 − 0 = 0	3 − 3 = 0	8 − 8 = 0	9 − 1 = 8	4 − 4 = 0
(3)	5 − 5 = 0	7 − 6 = 1	2 − 0 = 2	10 − 8 = 2	6 − 6 = 0	7 − 2 = 5	1 − 1 = 0	5 − 0 = 5
(4)	9 − 5 = 4	7 − 3 = 4	9 − 4 = 5	10 − 6 = 4	7 − 3 = 4	7 − 4 = 3	9 − 5 = 4	10 − 4 = 6
(5)	7 − 4 = 3	9 − 5 = 4	7 − 3 = 4	10 − 4 = 6	9 − 4 = 5	10 − 4 = 6	10 − 6 = 4	7 − 3 = 4
(6)	9 − 3 = 6	9 − 6 = 3	8 − 3 = 5	10 − 7 = 3	9 − 3 = 6	10 − 3 = 7	9 − 6 = 3	8 − 5 = 3
(7)	8 − 5 = 3	9 − 6 = 3	8 − 3 = 5	10 − 3 = 7	9 − 6 = 3	10 − 7 = 3	8 − 3 = 5	9 − 3 = 6
(8)	9 − 5 = 4	7 − 3 = 4	9 − 6 = 3	10 − 7 = 3	7 − 7 = 0	8 − 3 = 5	9 − 0 = 9	4 − 4 = 0

NOTE TO TEACHER. Group III, as given on this sheet, contains 12 new subtraction facts with repetitions and also most of the subtraction facts involving zeros. These facts are developed on pages 50–57.

Do not tear out this sheet.

REMEDIAL SHEET 6

COLUMN ADDITION

Add. Write the answers on folded paper:

(1)	2 1 5 8	1 5 4 10	6 3 1 10	7 1 1 9	6 1 2 9	2 1 3 6	4 1 4 9	1 6 2 9
(2)	7 2 1 10	3 5 2 10	5 3 2 10	4 3 3 10	2 3 4 9	1 4 3 8	4 2 2 8	2 5 3 10
(3)	6 3 6 15	5 2 7 14	7 2 6 15	8 1 7 16	7 1 7 15	5 5 1 11	5 4 2 11	4 3 6 13
(4)	7 2 7 16	7 3 4 14	5 4 5 14	6 3 4 13	6 4 5 15	8 1 6 15	7 6 1 14	6 6 1 13
(5)	2 1 8 11	4 1 7 12	4 2 6 12	7 2 3 12	5 1 8 15	5 2 5 12	3 3 5 11	7 1 4 12
(6)	6 1 7 14	3 6 2 11	3 1 7 11	3 4 4 11	4 5 2 11	4 6 1 12	5 1 6 12	4 2 5 11

NOTE TO TEACHER. Rows 1–2 apply the addition facts of Groups I, II, and III only: rows 3–4 apply the facts of Groups IV and V; rows 5–6 apply the facts of Group VI.

Do not tear out this sheet.

REMEDIAL SHEET 9

ADDITION FACTS—GROUPS IV AND V

Add. Write the answers on folded paper:

(1)	8 + 8 = 16	9 + 8 = 17	5 + 6 = 11	7 + 8 = 15	6 + 6 = 12	8 + 8 = 16	9 + 8 = 17	7 + 6 = 13
(2)	6 + 7 = 13	8 + 9 = 17	7 + 7 = 14	9 + 9 = 18	7 + 6 = 13	8 + 7 = 15	6 + 5 = 11	7 + 7 = 14
(3)	7 + 8 = 15	6 + 6 = 12	9 + 9 = 18	7 + 6 = 13	9 + 8 = 17	6 + 5 = 11	8 + 8 = 16	5 + 6 = 11
(4)	9 + 9 = 18	8 + 7 = 15	6 + 5 = 11	8 + 7 = 15	7 + 7 = 14	6 + 6 = 12	8 + 9 = 17	6 + 7 = 13
(5)	9 + 5 = 14	7 + 9 = 16	9 + 3 = 12	6 + 9 = 15	9 + 2 = 11	4 + 9 = 13	9 + 7 = 16	3 + 9 = 12
(6)	3 + 9 = 12	9 + 4 = 13	4 + 9 = 13	9 + 7 = 16	9 + 2 = 11	5 + 9 = 14	2 + 9 = 11	9 + 6 = 15
(7)	5 + 9 = 14	9 + 2 = 11	6 + 9 = 15	2 + 9 = 11	5 + 9 = 14	9 + 3 = 12	6 + 9 = 15	4 + 9 = 13
(8)	9 + 6 = 15	3 + 9 = 12	7 + 9 = 16	9 + 5 = 14	9 + 3 = 12	7 + 9 = 16	3 + 9 = 12	9 + 4 = 13

NOTE TO TEACHER. Groups IV and V contain 24 addition facts with repetitions. These facts, which have sums greater than 10, are developed on pages 72, 76, and 88–90.

Do not tear out this sheet.

REMEDIAL SHEET 10

ADDITION FACTS—GROUP VI

Add. Write the answers on folded paper:

(1)	5 7 12	4 8 12	8 3 11	7 5 12	5 8 13	4 7 11	6 8 14	8 4 12
(2)	7 4 11	8 5 13	4 8 12	8 6 14	7 5 12	6 8 14	3 8 11	4 7 11
(3)	6 8 14	3 8 11	5 8 13	8 4 12	5 8 13	7 4 11	8 3 11	5 7 12
(4)	7 5 12	3 8 11	8 5 13	4 7 11	8 3 11	5 7 12	8 6 14	4 8 12
(5)	5 3 4 12	9 7 1 17	2 2 7 11	4 3 5 12	8 1 3 12	4 3 4 11	9 1 4 14	4 4 4 12
(6)	9 5 1 15	6 1 6 13	4 1 8 13	3 2 7	7 1 8 16	4 5 3 12	5 1 5 11	5 3 6 14
(7)	8 1 2 11	7 5 1 13	6 1 4	5 3 5	3 5 4	8 1 5	5 4 3	4 2 7

NOTE TO TEACHER. Group VI, given in rows 1–4, contains 12 new addition facts which are developed on pages 105 and 118. Rows 5–7 apply these and other facts in column addition.

Do not tear out this sheet.

REMEDIAL SHEET 11

PREPARATION FOR SUBTRACTION

On folded paper write the numbers that are left out:

(1)	$\frac{9}{*}{\,}{18}$	$\frac{6}{*}{\,}{13}$	$\frac{9}{*}{\,}{17}$	$\frac{5}{*}{\,}{11}$	$\frac{8}{*}{\,}{17}$	$\frac{7}{*}{\,}{14}$	$\frac{6}{*}{\,}{13}$	$\frac{7}{*}{\,}{15}$
(2)	$\frac{5}{*}{\,}{11}$	$\frac{8}{*}{\,}{15}$	$\frac{6}{*}{\,}{12}$	$\frac{7}{*}{\,}{13}$	$\frac{9}{*}{\,}{18}$	$\frac{9}{*}{\,}{17}$	$\frac{6}{*}{\,}{11}$	$\frac{8}{*}{\,}{16}$
(3)	$\frac{2}{*}{\,}{11}$	$\frac{4}{*}{\,}{13}$	$\frac{9}{*}{\,}{12}$	$\frac{5}{*}{\,}{14}$	$\frac{9}{*}{\,}{15}$	$\frac{9}{*}{\,}{16}$	$\frac{6}{*}{\,}{15}$	$\frac{9}{*}{\,}{13}$
(4)	$\frac{9}{*}{\,}{12}$	$\frac{9}{*}{\,}{14}$	$\frac{2}{*}{\,}{11}$	$\frac{7}{*}{\,}{16}$	$\frac{3}{*}{\,}{12}$	$\frac{9}{*}{\,}{11}$	$\frac{4}{*}{\,}{13}$	$\frac{9}{*}{\,}{15}$
(5)	$\frac{4}{*}{\,}{12}$	$\frac{5}{*}{\,}{13}$	$\frac{8}{*}{\,}{11}$	$\frac{7}{*}{\,}{12}$	$\frac{6}{*}{\,}{14}$	$\frac{4}{*}{\,}{11}$	$\frac{8}{*}{\,}{13}$	$\frac{8}{*}{\,}{14}$
(6)	$\frac{8}{*}{\,}{13}$	$\frac{7}{*}{\,}{11}$	$\frac{8}{*}{\,}{14}$	$\frac{5}{*}{\,}{12}$	$\frac{7}{*}{\,}{11}$	$\frac{3}{*}{\,}{11}$	$\frac{8}{*}{\,}{12}$	$\frac{5}{*}{\,}{12}$

NOTE TO TEACHER. In using folded paper in ex. 1 on this page, the edge of the paper is placed under the sums instead of under the stars. The pupil then writes on the paper the proper numbers to replace the stars. Rows 1–2 include the facts of Group IV; rows 3–4 include Group V; and rows 5–6 include Group VI.

Do not tear out this sheet.

REMEDIAL SHEET 12

SUBTRACTION FACTS—GROUPS IV AND V

Subtract. Write the answers on folded paper:

(1)	11 − 6 = 5	15 − 7 = 8	17 − 9 = 8	12 − 6 = 6	15 − 8 = 7	13 − 7 = 6	11 − 5 = 6	16 − 8 = 8
(2)	14 − 7 = 7	18 − 9 = 9	17 − 9 = 8	13 − 6 = 7	12 − 6 = 6	15 − 8 = 7	14 − 7 = 7	17 − 8 = 9
(3)	14 − 7 = 7	17 − 8 = 9	16 − 8 = 8	11 − 5 = 6	18 − 9 = 9	13 − 6 = 7	11 − 6 = 5	13 − 7 = 6
(4)	18 − 9 = 9	15 − 7 = 8	12 − 6 = 6	13 − 6 = 7	17 − 9 = 8	11 − 5 = 6	16 − 8 = 8	15 − 8 = 7
(5)	12 − 9 = 3	16 − 7 = 9	14 − 5 = 9	12 − 3 = 9	13 − 9 = 4	15 − 6 = 9	11 − 2 = 9	13 − 4 = 9
(6)	13 − 9 = 4	11 − 2 = 9	16 − 7 = 9	14 − 5 = 9	16 − 9 = 7	11 − 9 = 2	12 − 9 = 3	14 − 9 = 5
(7)	16 − 9 = 7	12 − 3 = 9	13 − 4 = 9	11 − 9 = 2	15 − 9 = 6	14 − 5 = 9	11 − 2 = 9	15 − 6 = 9
(8)	14 − 9 = 5	15 − 6 = 9	11 − 9 = 2	12 − 9 = 3	16 − 7 = 9	16 − 9 = 7	13 − 4 = 9	15 − 9 = 6

NOTE TO TEACHER. Groups IV and V contain 24 subtraction facts with repetitions. These 24 facts are developed on pages 74, 82, and 94–96.

Do not tear out this sheet.

REMEDIAL SHEET 13

SUBTRACTION FACTS—GROUP VI

Subtract. Write the answers on folded paper:

(1)	11 −4 = 7	12 −7 = 5	13 −5 = 8	11 −3 = 8	12 −5 = 7	14 −8 = 6	11 −7 = 4	12 −4 = 8
(2)	12 −8 = 4	14 −6 = 8	11 −7 = 4	13 −8 = 5	12 −7 = 5	11 −8 = 3	12 −4 = 8	14 −8 = 6
(3)	14 −6 = 8	11 −3 = 8	13 −5 = 8	12 −4 = 8	14 −8 = 6	11 −4 = 7	13 −5 = 8	12 −5 = 7
(4)	11 −4 = 7	13 −8 = 5	12 −5 = 7	11 −8 = 3	14 −6 = 8	12 −8 = 4	11 −3 = 8	13 −8 = 5

(5) 14 is 9 more than 5. 6 is 6 less than 12.

(6) 10 is 2 more than 8. 9 is 4 less than 13.

(7) 12 is 9 more than 3. 2 is 9 less than 11.

(8) 16 is 8 more than 8. 8 is 7 less than 15.

(9) 11 is 5 more than 6. 7 is 9 less than 16.

(10) 17 is 9 more than 8. 7 is 7 less than 14.

(11) 15 is 8 more than 7. 6 is 7 less than 13.

NOTE TO TEACHER. Group VI, given in rows 1–4, contains 12 subtraction facts which are developed on pages 112 and 129. Rows 5–11 give practice in comparing numbers.

Do not tear out this sheet.

SUGGESTIONS FOR TEACHERS

During the past 25 years great progress has been made throughout the world with respect to the teaching of mathematics in both elementary and secondary schools. During this period the leaders in mathematical education have pointed out that the outstanding contribution of mathematics in its practical applications lies in the study of *number relationships* and that much of the value of mathematics is lost if the relationships of quantities to each other are not properly considered. Educators speak of this contribution as the "function concept," which means, in simple language, a study of the relationship of one quantity to another. This relationship notion has already been introduced into the mathematics of the upper elementary grades and it is now making its contribution to the teaching of arithmetic in the primary grades.

During the past 25 years there has been much mechanical and lifeless teaching of the basic number facts in which children have been obliged to memorize facts whose meaning they did not know and which consequently were soon forgotten. This mechanical teaching was favored by certain misinterpretations of the educational psychology of that period in spite of the fact that Professor E. L. Thorndike, the eminent educational psychologist, had repeatedly pointed out in his book, "The Psychology of Arithmetic," that number relationships are outstandingly important in the teaching of the number facts.

The method of teaching the addition and subtraction facts through number relationships, which is one of the outstanding features of this workbook, is presented below. In order fully to understand this discussion, the reader should carefully study each of the pages of this book to which reference is made.

The Addition Facts

Adding 1 and 2. The addition facts obtained by adding 1 to each of the digits are developed on pages 8–11. The facts obtained by adding 2 to each digit are given on pages 18–22. The easy doubles, such as 3 and 3, 4 and 4, and 5 and 5, are included in these groups. Experience shows that children soon become able to add 1 or 2 mentally to any digit without the necessity of counting objects.

The Principle of Reverses. The method of teaching the addition facts is to present each fact *and its reverse* at the same time. On page 8, for example, 1 and 3 is taught along with 3 and 1. A similar practice is followed in developing the other facts. Through various illustrations the pupil soon sees that the sum of two numbers is the same regardless of the order in which they are added; that is, that 5 and 2 has the same sum as 2 and 5. His attention is called to this important principle, in a simple way, on page 20. Thus the pupil becomes acquainted with the *principle of reverses* which is one of the most useful number relationships in mathematics. This principle enables the child to help himself when he forgets a number fact. For example, if he does not recall the sum of 2 and 7, he interchanges the numbers and gets 7 and 2, and then tries to give their sum. He probably recalls that 7 and 2 are 9, hence 2 and 7 are 9. In remedial work, one of the first things for the teacher to do if a child hesitates on a number fact is to ask the child to interchange the numbers and try again. By using the principle of reverses two addition facts are always learned *at the same time*, namely, a fact and its reverse. This reduces almost by half the task of learning the addition facts.

Zero Facts. There are 19 addition facts in which zero is one of the two numbers to be added. These facts are presented on pages 34 and 35. The child soon learns that to add zero to a number does not change the number.

Using the Doubles as Helpers. Every experienced primary teacher is familiar with the fact that children learn the doubles, such as 3 and 3, 5 and 5, and 8 and 8, with great facility. Once these doubles are learned they are not easily forgotten. It is a simple matter to take advantage of the child's knowledge of the doubles to enable him to learn other addition facts that are closely related to the doubles. For example, 3 and 4 is closely related to 3 and 3. If the child knows that 3 and 3 are 6, it is easy for him to be taught that 3 and 4 are 7. Likewise, the child who knows that 7 and 7 are 14 readily learns that 7 and 8 are 15. This work is developed on pages 38–39 of this book for certain facts with sums less than 10 and on pages 72, 73, and 76–80 for a group of facts with sums over 10. Addition facts like 3 and 4, 6 and 7, and 8 and 9, have usually been considered rather difficult facts, yet by relating each of these facts to one of the doubles they are quickly learned. If a child forgets that 4 and 5 are 9, the teacher asks, "How many are 4 and 4?" and then asks, "How many are 4 and 5?"

The principle involved in using the doubles to develop a new fact may be stated as follows: *if 1 is added to one of two numbers, their sum is increased by 1.* Naturally children are not to be expected to state this principle, but they can learn to use it in a practical way through frequent oral exercises in which objects are used. In introducing this principle, the teacher may start with objects representing 3 and 3, as is done on page 38 of the text. By adding 1 more object to one of the 3's, it is seen that the sum is increased by 1. Such objective illustrations should be repeated starting with 4 and 4, 5 and 5, and so on. Other illustrations are given on page 76.

SUGGESTIONS FOR TEACHERS

Other Relationships. After the pupil becomes fully acquainted with the doubles as helpers, he is then ready to apply the same principle to facts outside the area of the doubles, as may be done in getting the sum of 6 and 3 from 6 and 2. Since 6 and 2 are 8, then 6 and 3 are 9. Applications of this kind are made to a miscellaneous group of facts on pages 40, 106, 107, 119, and 120.

Adding 9. For many years a large group of teachers has used number relationships as an aid to the learning of those addition facts that have 9 as one of the addends. This is an important group of facts, covering 15 facts with sums above 10. These particular facts have usually been regarded as among the most difficult of all the addition facts, but by the use of number relationships, they are easily learned. By grouping objects the child is shown that a fact like $9 + 5$ is the same as $10 + 4$, or 14. Hence $9 + 5 = 14$. See pages 88–93 of this text. By the repeated use of objects, the child comes to see that adding 9 to another number is the same as taking 1 from the other number and adding 10 to the result.

The Final Goal. As soon as the child is able to give promptly the answer to an addition fact, he should not be required to explain how he got it by any of the relationships that he has studied. The correct answer is sufficient. After arriving at the correct answer to a fact a number of times through the use of relationships, the pupil soon comes to the point where he remembers the answer without going through the reasoning involved in the relationship. When that point is reached, the reasoning should be dropped.

Since the method of teaching the addition facts through number relationships finally produces the facts in memorized form so that they may be used automatically in computation, the question arises; Why go to all this trouble with number relationships? Why not memorize the addition facts at once and have it over with? The answer to this question is that wide experience shows that the method of learning the addition facts merely by repeating them in a mechanical way until they are memorized has proved to be a very costly one in which the pupil is tempted to guess, giving the wrong answer quite as often as the right one. It is this mixture of right and wrong responses that *delays* the final memorizing of the correct response. If the child always gives the right response, the time required to memorize the answer is greatly shortened. This is just what happens in using number relationships — guessing is eliminated and wrong responses are avoided. That is why the relationship plan is vastly superior to the old repetition-memory plan. There is another element that enters into the relationship plan that is entirely absent in the repetition-memory plan and that is the element of *interest*. In the relationship plan the child's mind is alert, he *has* to think, he devises relationships to help him out, and he is thoroughly interested in the intellectual challenge that the relationship involves. In the old repetition-memory plan there is nothing to do but play the part of a phonograph with no element whatever to stimulate the imagination. Still another point in favor of the relationship plan is that it constantly puts *meaning* and *understanding* into number work and further develops the *number concepts* that are so essential to successful work in arithmetic. In contrast, in the repetition-memory plan, the child often attempts to memorize number facts that are meaningless to him.

It is important not to demand too soon that the child give the answers to a group of facts within a certain time limit. "Slow but sure" is a good motto in all beginning number work.

The Subtraction Facts

Concepts of Subtraction. Subtraction in a large number of its applications is a *take away* process, in which many of its problems result in the question "How many are left?" Subtraction also has its additive aspects as is illustrated in the problem: "A boy has 7¢. How much *more* does he need in order to buy a top that costs 10¢?" Subtraction is also used in making comparisons as is shown in this problem: "Bob weighs 58 lb. and Mary weighs 54 lb. What is the difference in their weights?" In this problem the question might also be "How much more does Bob weigh than Mary?" Thus we see that subtraction sometimes involves the "take away" concept and sometimes the "additive" or "building up" concept. Hence a child must become acquainted with both these concepts in the second grade regardless of whether he is to be taught the "additive" or the "take away" method of written subtraction a year or so later.

Relating Addition and Subtraction. In this book both the "take away" and "additive" concepts of subtraction are taught. Further, the relationship between addition and subtraction is carefully developed, so that, if a pupil forgets a subtraction fact, he is able to help himself to get the right answer by bringing the proper addition fact to his aid. Thus the teaching of subtraction is enormously simplified. Instead of memorizing *independently* 100 subtraction facts, besides the 100 addition facts, the pupil is able to make his addition facts do the double duty of serving him for addition and also of enabling him to correct himself when he gives a wrong response to a subtraction fact.

Continued on page 158.

SUGGESTIONS FOR TEACHERS

The teaching of the subtraction facts as developed in this book can best be understood by studying typical pages of the text itself. Further it must be made clear that the use of objects is as necessary in teaching subtraction as it is in teaching addition.

Plan of Treatment. The first work on subtraction in this book begins on pages 13, 14, and 16 where objects are used to develop the "take away" concept. Many similar illustrations, using objects, must be given *orally* by the teacher. This work is continued on pages 25–29. On pages 27–30, it will be found that the connection between subtraction and addition is beginning to be pointed out. This connection of the two processes continues on pages 52–57 and reaches the stage where the child is told how to think his way out of his difficulty if he forgets the answer to a subtraction fact. In this thinking the child calls into play his knowledge of addition. Further help of this kind is given on pages 74, 75, and 95–97.

The comparison aspect of subtraction is developed on pages 98–100 where the pupil is again shown how to depend upon his knowledge of addition if he gives a wrong answer. Pages 111, 113–115, and 129–130 complete the development of this work.

Throughout this Workbook, the teacher will be impressed by the simplicity and effectiveness of the plan of using the relationship between addition and subtraction as a means of learning the subtraction facts. It must be emphasized, as it was in connection with addition, that the use of this relationship is to be discontinued just as soon as the child has automatic mastery of the subtraction facts.

How to Use this Workbook

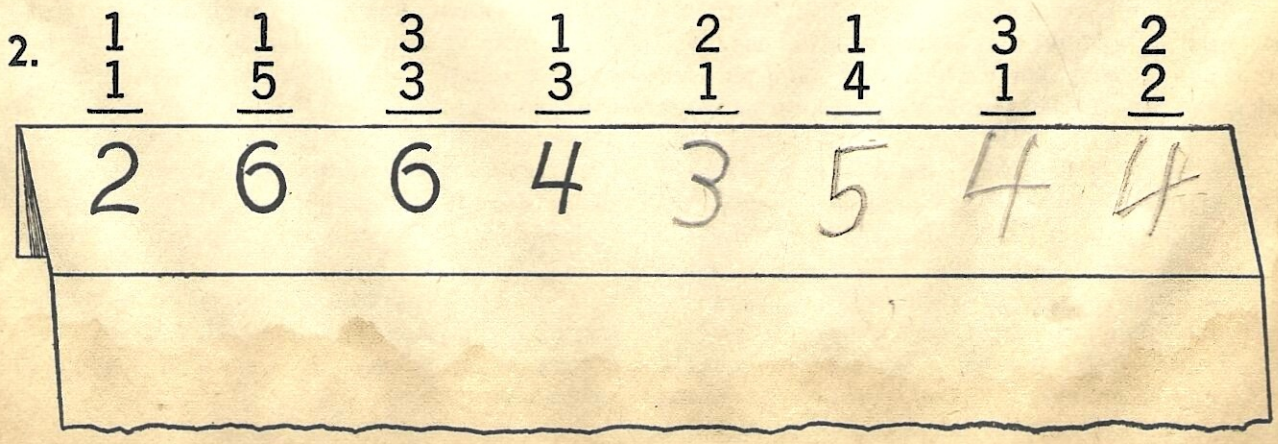
Directions to Pupils. In using this book it is important that the pupils know exactly what to do on each page before starting the work. Hence the teacher should read over with the pupils such directions as may be given on any page.

Reading Exercises. Successful work in problem solving depends as much on the ability to read as on a knowledge of number facts. Hence, before doing the written work on a page of problems, the pupils should read the page orally. In this way they will become acquainted with words frequently used in arithmetic and will also give the teacher opportunity to see if they understand the work. Along with this reading the answers to the problems may be given orally. After the reading the pupils should write the answers on the dotted lines. This oral reading may be discontinued at the teacher's discretion.

Number Facts. The plan of this Workbook is to present a few facts at a time on an interesting developmental page and to follow this introduction by problems and abstract drill using these facts. As the work progresses, the drill is cumulative, including facts previously learned as well as new ones.

Diagnostic and Remedial Work. Experience shows that children differ widely as to the amount of repetition they need in order to learn the basic number facts. Hence the Diagnostic Tests given throughout this Workbook should be used to test the pupils' ability with respect to the several groups of facts. After such testing, the Remedial Sheets on pages 143–155 will provide additional practice for the pupils who need it.

The Remedial Sheets should not be torn out of the Workbook, since they will be used over and over again. Hence, in using these sheets, it is important that the answers be written on folded paper and not on the Remedial Sheet itself. For example, on Remedial Sheet 1 (page 143), the pupil should place a sheet of paper with its upper edge immediately under the first row of addition facts, writing the answers along the edge of the paper. When the first row is finished, the answers should be folded under, the second row being worked along the folded edge, and so on. It will save time if the paper is folded in advance so as to form the creases, each fold being about 1 inch wide. The illustration below shows how this folded paper is used when the pupil has finished the first row of a set of exercises and is starting to do the second row.



THE 100 ADDITION FACTS

0	0+0=0	1+0=1	2+0=2	3+0=3	4+0=4	5+0=5	6+0=6	7+0=7	8+0=8	9+0=9
1	0+1=1	1+1=2	2+1=3	3+1=4	4+1=5	5+1=6	6+1=7	7+1=8	8+1=9	9+1=10
2	0+2=2	1+2=3	2+2=4	3+2=5	4+2=6	5+2=7	6+2=8	7+2=9	8+2=10	9+2=11
3	0+3=3	1+3=4	2+3=5	3+3=6	4+3=7	5+3=8	6+3=9	7+3=10	8+3=11	9+3=12
4	0+4=4	1+4=5	2+4=6	3+4=7	4+4=8	5+4=9	6+4=10	7+4=11	8+4=12	9+4=13
5	0+5=5	1+5=6	2+5=7	3+5=8	4+5=9	5+5=10	6+5=11	7+5=12	8+5=13	9+5=14
6	0+6=6	1+6=7	2+6=8	3+6=9	4+6=10	5+6=11	6+6=12	7+6=13	8+6=14	9+6=15
7	0+7=7	1+7=8	2+7=9	3+7=10	4+7=11	5+7=12	6+7=13	7+7=14	8+7=15	9+7=16
8	0+8=8	1+8=9	2+8=10	3+8=11	4+8=12	5+8=13	6+8=14	7+8=15	8+8=16	9+8=17
9	0+9=9	1+9=10	2+9=11	3+9=12	4+9=13	5+9=14	6+9=15	7+9=16	8+9=17	9+9=18

NOTE TO TEACHER. If a pupil forgets a fact, he may refer to this table. The number 0 at the left of the first row indicates that all the facts in that row have 0 as the *second* figure. Similarly, the number 1 at the left of the second row indicates that the facts in that row have 1 as the *second* figure. To find a fact, such as $\frac{5}{3}$, first find the row marked 3; then look across that row until the fact is found.

THE 100 SUBTRACTION FACTS

0	0 − 0 = 0	1 − 0 = 1	2 − 0 = 2	3 − 0 = 3	4 − 0 = 4	5 − 0 = 5	6 − 0 = 6	7 − 0 = 7	8 − 0 = 8	9 − 0 = 9
1	1 − 1 = 0	2 − 1 = 1	3 − 1 = 2	4 − 1 = 3	5 − 1 = 4	6 − 1 = 5	7 − 1 = 6	8 − 1 = 7	9 − 1 = 8	10 − 1 = 9
2	2 − 2 = 0	3 − 2 = 1	4 − 2 = 2	5 − 2 = 3	6 − 2 = 4	7 − 2 = 5	8 − 2 = 6	9 − 2 = 7	10 − 2 = 8	11 − 2 = 9
3	3 − 3 = 0	4 − 3 = 1	5 − 3 = 2	6 − 3 = 3	7 − 3 = 4	8 − 3 = 5	9 − 3 = 6	10 − 3 = 7	11 − 3 = 8	12 − 3 = 9
4	4 − 4 = 0	5 − 4 = 1	6 − 4 = 2	7 − 4 = 3	8 − 4 = 4	9 − 4 = 5	10 − 4 = 6	11 − 4 = 7	12 − 4 = 8	13 − 4 = 9
5	5 − 5 = 0	6 − 5 = 1	7 − 5 = 2	8 − 5 = 3	9 − 5 = 4	10 − 5 = 5	11 − 5 = 6	12 − 5 = 7	13 − 5 = 8	14 − 5 = 9
6	6 − 6 = 0	7 − 6 = 1	8 − 6 = 2	9 − 6 = 3	10 − 6 = 4	11 − 6 = 5	12 − 6 = 6	13 − 6 = 7	14 − 6 = 8	15 − 6 = 9
7	7 − 7 = 0	8 − 7 = 1	9 − 7 = 2	10 − 7 = 3	11 − 7 = 4	12 − 7 = 5	13 − 7 = 6	14 − 7 = 7	15 − 7 = 8	16 − 7 = 9
8	8 − 8 = 0	9 − 8 = 1	10 − 8 = 2	11 − 8 = 3	12 − 8 = 4	13 − 8 = 5	14 − 8 = 6	15 − 8 = 7	16 − 8 = 8	17 − 8 = 9
9	9 − 9 = 0	10 − 9 = 1	11 − 9 = 2	12 − 9 = 3	13 − 9 = 4	14 − 9 = 5	15 − 9 = 6	16 − 9 = 7	17 − 9 = 8	18 − 9 = 9

NOTE TO TEACHER. If a pupil forgets a fact, he may refer to this table. The number **0** at the left of the first row indicates that all the facts in that row have 0 as the *second* figure. Similarly, the number **1** at the left of the second row indicates that the facts in that row have 1 as the *second* figure. **To** find a fact, such as $\underline{-\,3}^{5}$, first find the row marked 3; then look across that row until the fact is **found.**

SCORING TABLES

In this Workbook certain sets of abstract exercises may be scored quickly on a scale of 10 by means of the scoring tables below. Such a set of exercises, for example, is given on the lower half of page 19. In the lower right-hand corner of this set the following will be found: "(24) Use Table C." This means that there are 24 exercises in this set and that it is scored by using Table C below. If the pupil gets 19 exercises right in this set, Table C shows that his score is 8. In the practical use of Table C it is not necessary to take the (24) into consideration at all, since Table C is used only when a set contains 24 exercises. The (24) is given merely for the teacher's convenience. To score the set of exercises on page 22, Table A is used in the same manner as described above.

In scoring exercises, the teacher should first read the correct answers, instructing the pupils to draw lines through the examples that are wrong. Each pupil should then count the number of examples that he has right and should refer to the proper table below to find his score. With a small amount of instruction, the pupils can use the scoring tables.

The extent to which sets of exercises should be scored is entirely optional with the teacher. Some teachers will prefer to do no scoring whatever; in that event any reference to a scoring table at the end of a set of exercises should be ignored. Other teachers may wish to score more frequently than has been suggested; in such cases, this may be done by using the proper tables, which are as follows: Table A for 32 exercises, Table B for 28 exercises, Table C for 24 exercises, Table D for 21 exercises, and Table E for 64 exercises. In general, it is recommended that scoring, if done at all, be confined to those sets of exercises which have a reference at the end of the set indicating the table to be used; in this book, such references are given only at the end of reviews and tests. It seems unwise to attempt to score those sets of exercises which immediately follow the development of a new set of facts.

Table A	Number right	0	1–4	5–7	8–11	12–14	15–17	18–20	21–23	24–27	28–30	31–32
	Score	0	1	2	3	4	5	6	7	8	9	10

Table B	Number right	0	1–4	5–6	7–9	10–12	13–15	16–18	19–20	21–23	24–26	27–28
	Score	0	1	2	3	4	5	6	7	8	9	10

Table C	Number right	0	1–3	4–5	6–8	9–10	11–13	14–15	16–17	18–20	21–22	23–24
	Score	0	1	2	3	4	5	6	7	8	9	10

Table D	Number right	0	1–3	4–5	6–7	8–9	10–11	12–13	14–15	16–17	18–19	20–21
	Score	0	1	2	3	4	5	6	7	8	9	10

Table E	Number right	0	1–9	10–15	16–22	23–28	29–35	36–41	42–47	48–54	55–60	61–64
	Score	0	1	2	3	4	5	6	7	8	9	10

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